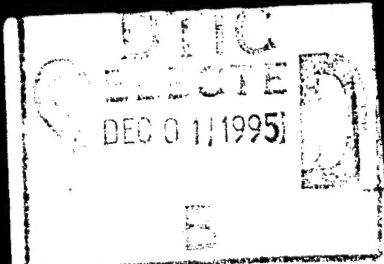
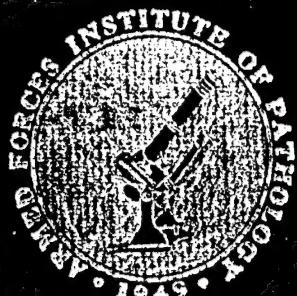


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*Its First Century*  
1862-1962

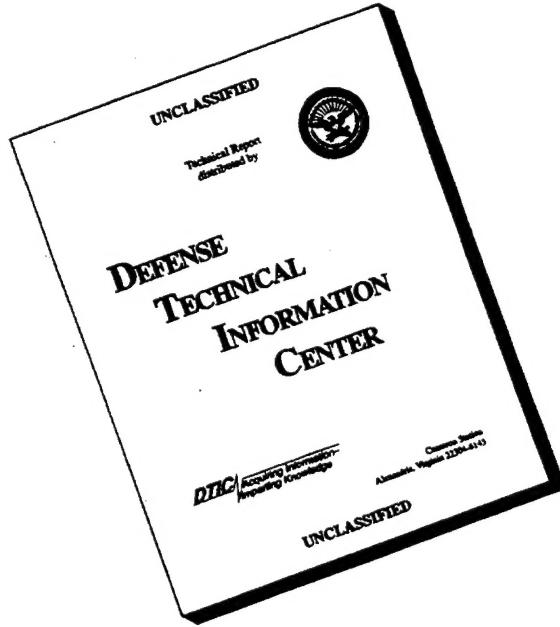
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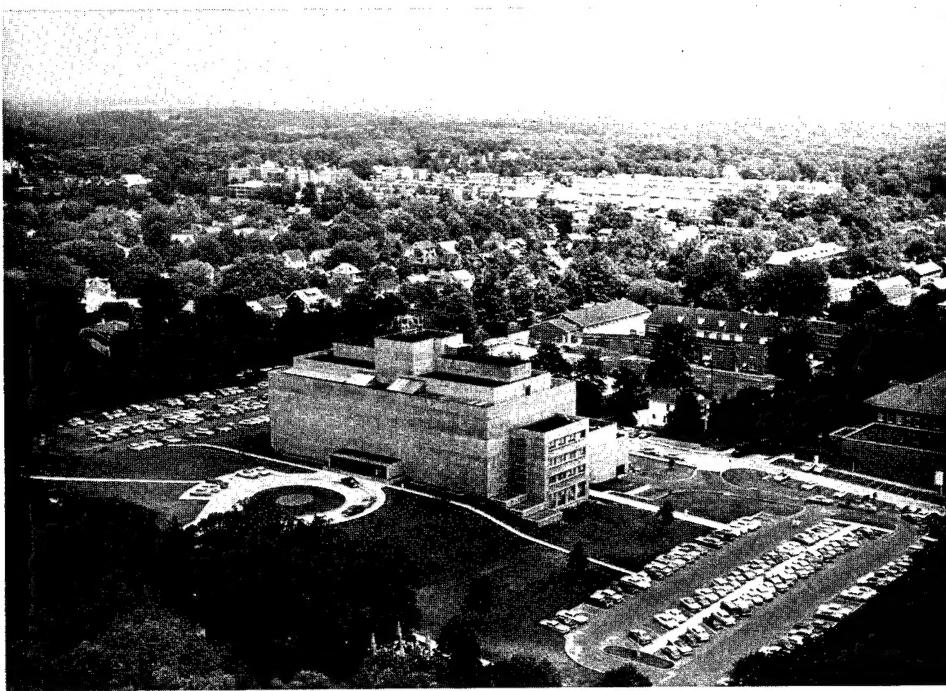


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The Armed Forces Institute  
of Pathology

*Its First Century*

1862–1962

*by*

ROBERT S. HENRY, A.B., LL.B., LITT.D.

*OFFICE OF THE SURGEON GENERAL*

*DEPARTMENT OF THE ARMY*

*WASHINGTON, D.C., 1964*

THE ARMED FORCES INSTITUTE  
OF PATHOLOGY

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## Foreword

As the Armed Forces Institute of Pathology approached its centennial year in nineteen hundred and sixty-two, it seemed appropriate to pause for a brief recapitulation of its accomplishments during its first one hundred years. To this end, a fitting ceremony was held in November 1962 to mark this event. The program was further enhanced by a 2-day scientific program that not only summed up what had been accomplished in the past but attempted to glimpse the future of the study of disease.

In addition to holding these programs, it was considered that the completion of the first century of the Institute would also be an appropriate time to compile a more detailed study of the people and events that had made the Institute one of the Nation's leading scientific institutions from its very inception. With the approval of the Board of Governors, the Surgeons General of the Army, Navy, and Air Force, and with the assistance of the staff of the Institute, its Scientific Advisory Board, and the Institute's many devoted consultants, a project to compile a history was initiated. The assistance and support of The Historical Unit, U.S. Army Medical Service, and of The Surgeon General of the Army were requested, and they enthusiastically joined in the effort to assemble this record. The role of The Historical Unit in the compilation of this volume is but a continuation of the long and intimate association of this Unit and the Institute. One of the two original missions of the Army Medical Museum, the forerunner of this Institute, was to prepare the great "Medical and Surgical History of the War of the Rebellion," the other being "to collect and to forward to the Office of the Surgeon General, all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable; together with projectile and foreign bodies removed, and such other matters as may prove of interest in the study of military medicine or surgery." This first effort of The Historical Unit, while it was still an integral part of the Army Medical Museum, moved Rudolf Virchow, the great German pathologist and the father of modern pathology, to comment, "From this time dates a new era in military science. Whoever reads these publications will be constantly astonished at the wealth of experience, the exactness of detail, the careful statistics and scholarly

statements embracing all sides of medical experience which preserve to posterity the knowledge bought at so vast an expense."

With the passage of time, The Historical Unit became a separate organization. The Army Medical Museum kept its original name until after World War II when, in 1946, it was deemed appropriate to rename it the Army Institute of Pathology. At this time, the Scientific Advisory Board was organized. Through the years since then, the dedication of the outstanding scientists who have served on the Board has been a landmark of strength to the Institute in the guidance of its professional developments.

In 1949, the U.S. Navy and Air Force joined forces with the Army, so that the Institute became a total effort of the armed services under the executive management of The Surgeon General of the Army and the Secretary of the Army. It was redesignated the Armed Forces Institute of Pathology.

Through the years, many curators and directors and the staff of the Museum-Institute had a continued interest in, and intuition of, the history that they were making. Documents and records were carefully prepared and preserved. From the outset, the Institute played a leading role in national medical developments as well as being an integral part of the Washington medical scene. Its close association, throughout its history, with the medical schools of George Washington University, Howard University, and Georgetown University attest to its leadership in medical affairs of the area. From its beginning, the value of the Institute as a means of instruction of young military physicians was apparent. A photographic department was added to the Museum in 1863, and the pioneer work in America in medical photography and photomicrography was accomplished by the Museum staff.

From its early days, the Museum-Institute had been housed with the Army Surgeon General's Library, and the two remained under the same roof until 1955, when the latter, after a brief period as the Armed Forces Medical Library, became the National Library of Medicine. At the same time, the Institute acquired new quarters at the Walter Reed Army Medical Center. The location of the Institute at this great medical facility seemed appropriate, since Walter Reed had been for almost a decade, until his death in 1902, Curator of the Medical Museum. It was during his tenure that the Army Medical School was formed in the Museum building. In 1910, the School secured quarters of its own and eventually grew to become the great institution known today as the Walter Reed Army Institute of Research.

Out of World War I came the impetus for the training of pathologists and the growth of pathology in the United States to the status of world emi-

nence this country has in this field in the present day. World War II saw the Museum as the leader in bringing about the standardization of diagnoses and teaching methods in pathology that has enhanced the science of the study of disease in the past two decades.

The Institute's close relationship with civilian medicine also has origins in the very beginning of the Museum. The first formal arrangement between the Museum and civilian medicine took place in 1895, when the American Dental Association adopted the Museum as a repository for study materials in the field of dentistry. The next great step was the founding of the American Registry of Ophthalmology in 1921. The establishment of the American Registry of Pathology under the auspices of the National Academy of Sciences-National Research Council and the Museum in 1933 gave signal impetus to the registry movement, and by the end of the centennial year in 1962 the number of Registries had grown to 27.

Following World War I, the Museum also became the repository for the material from the Veterans' Administration hospitals. This was discontinued in 1929, but after World War II the Veterans' Administration designated the Armed Forces Institute of Pathology as its "Central Laboratory for Anatomic Pathology and Research." Since that time, the Veterans' Administration has played a key role in the affairs of the Institute. Its employees make up a portion of the professional, technical, and clerical staff. This liaison between the Armed Forces and the Veterans' Administration permits former patients to be followed after they leave the service and greatly enhances the repository of case material available to the Institute. Through the aegis of the American Registry of Pathology, civilian pathologists also contribute cases to the Institute files that are valuable in filling gaps in the overall knowledge of disease; this information cannot be acquired from the military population alone. Beginning with the work of Walter Reed and the Museum staff in the 1890's on yellow fever, the Institute has had a continued interest in tropical diseases and other disease entities that occur throughout the world. This collection of material was invaluable in the beginning of World War II in the preparation of manuals and textbooks used in the training of physicians who were to accompany our troops to the remote corners of the earth during that conflict. The Institute has continued this interest in global medicine, with members of its staff collecting material from all corners of the world. Contributions of cases by pathologists of other countries have added significantly to the collection of disease entities, which now exceeds one million cases. From this vast storehouse of

cases, much teaching material is prepared and made available for loan to governmental and nongovernmental pathologists.

Starting soon after World War II, the Institute embarked on the publication of the fascicles of the "Atlas of Tumor Pathology," in conjunction with the Division of Medical Sciences of the National Research Council and, specifically, the Committee on Pathology and its Subcommittee on Oncology. To date, some 33 of the 39 fascicles of the Atlas have been completed and are available at nominal cost through the American Registry of Pathology. These fascicles have been enthusiastically received by pathologists throughout the world. It is through the fascicles that the Armed Forces Institute of Pathology is known by practically every pathologist and other medical workers in all countries. While the authors of these fascicles are outstanding authorities throughout the United States and the United Kingdom, it has only been through the efforts of the staff of the Institute, the American Registry of Pathology, the Institute's Medical Illustration Service, and the National Research Council that the publication and dissemination of the fascicles has been made possible.

With the designation of the Institute as an Armed Forces activity, the U.S. Public Health Service also began to play an active role in the Institute and has had pathologists assigned to the staff since that time. This Public Health Service participation was endorsed during the centennial year with the establishment of the Radiation Pathology Registry; additional financial and personnel support was given to this important endeavor so vital within the framework of the Institute's organization.

The greatest problem that confronted the Institute and The Historical Unit in beginning the compilation of this history of the Museum-Institute was securing an author who could sift through the mountain of records and other historical material that would tell the story of the organization. It was desired that the story be told in such a manner that it would have appeal to the lay reader but still preserve the scientific content. In Robert Selph Henry, Litt.D., of Alexandria, Virginia, such a man was found. Dr. Henry is one of the leading American historians and famed for his writings of the Mexican War and the American Civil War. He is a man of varied interests who has served many years as Vice President of the Association of American Railroads and has prepared numerous treatises on railroading. In addition to being a member of the Board of Regents of Vanderbilt University, his alma mater, Dr. Henry was also one of the consultants in the preparation of the third edition of "Webster's New International Dictionary." Within a brief period of 2 years, Dr. Henry sorted through the voluminous document file of the Institute and

many other varied sources, and this book is a testimony to his ability to recognize the high points of the story of the Institute during its one hundred years of existence. Of necessity, attention had to be given to routine coming and going of personnel and other administrative changes that are a part of the story of any organization. He has maintained reader interest with accounts of individual accomplishment, and with many vignettes that lend fascination to the narration and make events of the past come alive.

This brief look back over the century seems a fitting milepost and spring-board for this unique organization as it enters its second hundred years. With its ever-expanding program of research, education, and consultation, the Institute gives promise of being of even greater service to the Armed Forces and to the Nation in the years to come. As the century from the 1860's to the 1960's can be classified as the era of cellular pathology, so can the next few decades be expected to see the development of studies within the cell, or so-called molecular pathology. With its rich heritage from the past, the Institute today finds itself in the forefront of these newer developments. A glimpse into the future is revealed in the last chapter of Dr. Henry's history. One can be sure that the record of the past will serve as an inspiration to those individuals responsible in the future for the destiny of the Armed Forces Institute of Pathology and its important role in advancing military medicine.

LEONARD D. HEATON,  
*Lieutenant General,*  
*The Surgeon General.*

## Preface

In the preparation of this book, I have had so much assistance and so many kindnesses from so many persons that I despair of making suitable acknowledgment to all to whom it is due.

First and foremost, I am deeply obliged to the Director of the Armed Forces Institute of Pathology, Col. Frank M. Townsend, U.S. Air Force, MC; to the Deputy Directors, Col. Joe M. Blumberg, MC, U.S. Army, and Capt. Roger H. Fuller, MC, U.S. Navy; and to the Scientific Director of the Institute, Dr. Robert E. Stowell. They have provided every facility and all possible assistance for the work.

Especially appreciated was the establishment of an Advisory Editorial Board, with Col. John Boyd Coates, Jr., MC, USA, Director of The Historical Unit, U.S. Army Medical Service, as chairman, and the following membership:

Col. James E. Ash, MC, USA (Ret.)

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Whatever merit this book has is due in no small degree to the counsel and guidance received from the members of this Board.

All departments, divisions, and branches of the Institute have helped in the preparation of the book, but special thanks are due Mr. Herman Van Cott, Chief of the Medical Illustration Service, and his staff, including Mr. Herbert C. Kluge, who rendered special service in going through the voluminous pictorial records of the Illustration Service and finding many of the photographs which are used.

Special thanks are due, also, to the staff of the Medical Museum, where most of the material for the volume was located and where most of the writing was done. Col. Albert E. Minns, Jr., MSC, USA (Ret.), Curator of the Museum when work on the book was started, and his successor, Col. John W. Sheridan, MSC, USA, have done all in their power to facilitate the work.

In the processing of the manuscript, the Executive Officer of the Institute, Lt. Col. Vernon S. Oettinger, MSC, USA, and the Adjutant, Lt. Col. Russell Z. Seidel, MSC, USA, and their staff have been most helpful, for which I am grateful.

The services of the Institutes' Ash Library and its Librarian, Mrs. Ruth Haggerty, have been numerous and varied, and are gratefully acknowledged, as are the services of the secretarial pool and the Reproduction Division of the Institute.

The Library of Congress, the National Archives of the United States, the National Library of Medicine, and The Historical Unit of the U.S. Army Medical Service have obligingly responded to every call for information and assistance.

I am particularly grateful to Dr. Esmond R. Long, author of "A History of Pathology," published in 1928, and "A History of American Pathology," published in 1962, for permission to quote from his books, and for his interest in the development of this book.

Thanks are also due to Dr. W. Montague Cobb, professor and head of the Department of Anatomy of the College of Medicine of Howard University, for information concerning Dr. Daniel Smith Lamb's connection with that institution.

Among the many individuals who have been helpful in the writing of this book, to all of whom I am grateful, there are a few whom I must mention with special appreciation: Mrs. Gwendolyn M. Evans, Mrs. Ida P. Gaylin, Miss Betty Krulack, Mrs. Genevieve Overmyer, Miss Helen R. Purtle, Mrs. Esther M. Stone, Miss Cleo A. Warren, M. Sgt. Julia S. Williams, Mr. H. E. Demick, Mr. Gordon T. Harrell, Mr. Myron Miller, Mr. James B. Smith, and Sgt. Bennett W. Thompson.

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ROBERT S. HENRY

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## CHAPTER I

# The Institute and Its Ancestry

On 21 May 1962, the Armed Forces Institute of Pathology entered upon the second century of its life. It had started one hundred years before as an item in Circular No. 2, of the Surgeon General's Office, in which Brig. Gen. William Alexander Hammond, The Surgeon General, announced his intention to establish an Army Medical Museum, for which medical officers were directed to collect specimens of morbid anatomy.

The collections with which the Museum started consisted of three dried and varnished bones resting on a little shelf above the inkstand on the desk of Brigade Surgeon John Hill Brinton, the young medical officer who was to become the first curator of the Museum which was to be established.

The Museum thus launched evolved into the Army Institute of Pathology which became the Armed Forces Institute of Pathology—a veritable treasure house of medical knowledge and an active center for consultation, research, and education in the effects of disease and injury upon the form and function of living cells and tissue.

For back of the announcement in Circular No. 2 was an idea—the idea that by careful collection, comparison, and study of the anatomical wreckage of the great war in which the United States and the Confederate States were then engaged, there might emerge a body of knowledge and understanding which would, in time, lead to the lessening of human suffering and the saving of human life.

To that end, the Museum and its successor Institutes have followed General Hammond's admonition, "diligently to collect" specimens of morbid anatomy and other materials of value and interest to the study of military medicine or surgery until, at the opening of the second century of its life, the Institute had in its collections more than 1,000,000 specimens—and is continuing to receive such specimens at the rate of 200 per day.

### *The Threefold Mission*

The institution which has grown to such proportions in its first century is unique in its organization and mission. It was founded and for 87 years

existed as an Army installation, and still is administered under the authority of the Secretary of the Department of the Army, acting through The Surgeon General of that Department, but it is not now an organization of and for the Army alone. It is truly a triservice organization, established as such by the joint action of the Department of Defense and the Departments of the Army, the Navy, and the Air Force, with its broad policies determined by a Board of Governors, the members of which are the Surgeons General of the three Armed Forces.

It is thus a military organization, but one with so strong an infusion of the civilian in its makeup and mission that the medical profession—the term “medical” as here used being broad enough to include the dental and veterinary professions as well—has come to accept and rely upon the Institute’s work and findings as a distinct, indeed a unique, contribution to the advancement of medical science and practice, civilian as well as military, throughout the Nation.

Nor are the services of the Museum-Institute limited to the boundaries of the United States, for they have followed wherever the American soldier, sailor, and airman have gone—to the western plains in the 19th century Indian campaigns; to Cuba, Puerto Rico, the Philippines, and the Canal Zone at the turn of the century; to Europe in the first war, known simply as the World War until a second world war of even greater dimensions took the American forces back to Europe, and to the continents of Africa, Australia, and Asia, to Japan, and the islands of the Pacific; and, at the halfway mark of the 20th century, to Korea.

From all these campaigns, as well as from the American Civil War during which the Museum was founded, lessons learned in the diagnosis and treatment of disease and trauma have been reported to the Museum-Institute in the form, principally, of specimens taken from surgical operations and from autopsies, together with the relevant medical history and records of each case.

### *The American Registry of Pathology*

In addition to this flow of materials from military installations in all parts of the world, the Institute receives the organized cooperation of civilian medicine, acting through the American Registry of Pathology, an arm of the National Research Council of the National Academy of Sciences. The American Registry of Pathology, which now includes 27 constituent registries sponsored by the appropriate national societies of the various medical specialties, is both an arm of the National Research Council and also one of the four main operating departments of the Armed Forces Institute of Pathology. Thus, the Registry

constitutes a living link between the operations of the Institute and civilian practitioners in regard to matters of pathology.

Pathology has been defined "as that specialty of the practice of medicine dealing with the causes and nature of disease, which contributes to diagnosis, prognosis and treatment through knowledge gained by laboratory applications of the biologic, chemical or physical sciences to man, or material obtained from man."<sup>1</sup>

Broad as it is, the definition is not broad enough to cover all the activities and contributions of the Institute. Being limited to man, it does not cover the work of the Institute in veterinary science, a field in which what is probably the largest staff of veterinary scientists in the country is engaged. Nor does it cover much of the work of the Medical Illustration Service, one of the four departments which make up the Institute, and one which is called upon for many services outside the perimeter of pathology.

The heart and core of the Institute is in its work of consultation, research, and education, carried on largely by its Department of Pathology. To this Department goes the daily intake of specimens sent in by medical officers in the field, pathologists at military hospitals, and civilian practitioners seeking light on some puzzling piece of pathological material. No matter whence it comes, the sender is asked to designate the degree of urgency which attends its sending by the use of code words which tell the staff at the Institute whether the utmost in expedition is required, or whether the specimen may safely be given ordinary expedited attention, or if it may go into the backlog of cases awaiting opportunity to be worked over by the Institute's pathologists.

In numerous instances, review of the original diagnosis by the Institute has profoundly altered the therapy applied. In other instances, materials have been submitted to the Institute too late for treatment to be affected by the revised diagnosis. Such was the case of a 22-year-old air cadet who developed a growth, upon an eye, which though actually benign was mistakenly diagnosed in the first instance as "malignant melanoma." The eye was removed, and the enucleated eye, along with the benign nevus, was sent to the Institute—too late to save the young cadet's eye. More fortunate in its outcome was a similar case in which the nevus, mistakenly diagnosed as malignant, was submitted to the Institute in time for a telegraphic report to save the patient's eye from enucleation.

Review of diagnoses by the Institute staff has prevented unnecessary operations, including amputations of limbs, in a number of cases. Such cases are

<sup>1</sup> Directory of Medical Specialists. Chicago: Marquis-Who's Who, Inc., 1961, vol. X, p. 823.

an infinitesimal percentage of all cases reviewed, but to the individual whose limb or whose sight is saved or lost, nothing could be more important.

Institute review of diagnosis is important, also, in preventing possible imposition on the Government or injustice to the serviceman in cases involving line-of-duty questions as to responsibility for death or disablement. Thus, Institute review has forestalled the collection of compensation for nonexistent disease and, on the other hand, has altered erroneous diagnoses of the causes of deaths which, if allowed to stand, would have denied benefits due the serviceman's family.

To many, and perhaps to most, of those outside medical circles, pathology is vaguely recognized as a special sort of medical activity, and the pathologist is a dim and remote background figure. This attitude was reflected in an aside from President Dwight D. Eisenhower when he was called upon to dedicate the new building of the Institute in May 1955. Turning to his friend and physician, Lt. Gen. Leonard D. Heaton, just before making the dedicatory address, the President said, "Leonard, what am I doing getting up to dedicate a building for pathology, when I don't even know what pathology is?"

In telling of the incident, General Heaton adds the comment that however little the President knew then what pathology is, "he would soon know"—having in mind the medical and surgical experiences that lay ahead of him. President Eisenhower, indeed, began to learn about pathology that same afternoon of the dedication, "For the enlightenment of this audience," he said in his opening remarks, "it is indeed fortunate that Dr. [Brig. Gen. Elbert] DeCoursey saw fit (in his address of welcome) to tell us about pathology. Because for myself, I can assure you that I have learned more in the last 5 minutes than I knew in my entire life before."

The most common picture of the pathologist in the popular mind—insofar as there is such a picture—is probably that of the specialist who advises the surgeon as to whether the tissues to be removed are, or are not, malignant. That, indeed, is an important part of what the specialist in pathology does, but it is, after all, a part only.

As Dr. James Milton Robb, of Detroit—not himself a pathologist—put it in his presidential address before the American Academy of Ophthalmology and Otolaryngology, in 1952:

\* \* \* the study of pathology in its relatively short life has grown from an investigation of the changes found in the human body after death and their correlation with the signs of disease which had been observed during life to include almost anything which had to

do with disease, etiology, pathogenesis, morbid anatomy, microscopic histology, parasitology, functional changes, chemical alterations, indeed any topic except treatment.<sup>2</sup>

Or, to put it more briefly and even more broadly, Dr. Esmond R. Long, practitioner and historian of pathology, describes pathology as "the basic informational science in the understanding of disease" and "a science that makes use of all other biological and medical disciplines in its development."<sup>3</sup>

In arriving at this broader concept of pathology and the place of the pathologist in the scheme of things medical, the Institute has played a major part. During the first half-century of its life, while it still was the Army Medical Museum, it contributed to medical research and education through compiling and publishing the massive "Medical and Surgical History of the War of the Rebellion," and through the introduction and development of such techniques as photomicrography and the use of aniline dyes in staining slides for microscopic study. Through its Curator, Maj. Walter Reed, it contributed to the conquest of yellow fever, and through another curator, Maj. Frederick Fuller Russell, it helped mightily in stamping out typhoid fever. Under the curatorship of Maj. George Russell Callender, the Museum broadened its work of education and research through its linkage with civilian medicine in the Registry movement.

Through the work of more recent curators, the Museum, while retaining its distinctive character as a place for exhibition of medical lore and historic materials to a large and increasing number of visitors, has had its greatest growth through the enlargement of its services of education and, increasingly of late years, of research.

### *"Unique in the World"*

Writing in 1946, when the Institute was still an Army organization and had not taken on its triservice character, Dr. Howard T. Karsner, then of Western Reserve University, described it as "unique in the world." He continued:<sup>4</sup>

\* \* \* Nowhere else has there ever been a concentration of pathological specimens that is comparable. Nowhere else is the pathology of the entire Army of a great country so concentrated. Nowhere else have the civilian pathologists and other interested physicians taken such a great part in organization and operation. Nowhere else has there been, as

<sup>2</sup> Transactions of the American Academy of Ophthalmology and Otolaryngology, September-October 1952, p. 715.

<sup>3</sup> Long, Esmond R.: A History of American Pathology. Springfield, Ill.: Charles C Thomas, Publisher, 1962, pp. 133, 147.

<sup>4</sup> Karsner, Howard T.: The American Registry of Pathology and Its Relation to the Army Institute of Pathology. The Military Surgeon 99: 368-369, November 1946.

continues to be true, such a close scientific liaison between medical officer and civilian doctor.

In the years since this was written, the Institute has not only taken on its triservice character; it has also become the central laboratory of pathology for the Veterans' Administration, the Atomic Energy Commission, and the U.S. Public Health Service, and has furnished informal consultation to the Civil Aeronautics Board and the Federal Aviation Agency.

All in all, as Dr. Esmond R. Long says in his recent (1962) book, "A History of American Pathology," the Armed Forces Institute of Pathology has "become in fact the hub of activities in the nation's pathology," in a period of activity since 1949 that "has never been matched by any organization for research and instruction in pathology."<sup>5</sup>

The sweep and scope of these activities of the Institute are indicated by the fact that its latest annual report, that for the last year of the first century of its life, requires 254 pages in order to outline the working organization and list in briefest form the activities undertaken and carried forward during the year. These activities included 194 registered research projects, 91 publications by staff members, 11 postgraduate courses with an attendance of 1,105, the distribution of 27,000 copies of fascicles published as part of the "Atlas of Tumor Pathology," and the creation of 55 new visual exhibits—to mention but a few items of work done in but one year out of the one hundred years of the life of the Museum-Institute.

In the opening years of the second century of its life, the Institute is carrying forward studies that range from the nature and behavior of the infinitesimally small subcellular particles that are revealed only in the stream of electronic waves of the electron microscope to the inconceivable vastness of outer space. For wherever man may go, and whatever he may see, pathology—the scientific cornerstone of medicine—goes with him, and its evidences are to be seen.

This volume does not undertake to treat in detail the history of the first century of the Museum and its offspring, the Institute—a multi-volume task—but seeks to tell in brief compass the story of the soil and the seed from which a great medical service has grown, with some account of the men and women who have made great the century-old Armed Forces Institute of Pathology.

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<sup>5</sup> Long, *op. cit.*, pp. 379, 381.

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## CHAPTER II

# Background and Beginnings

In May 1862, the United States had been at war with the Confederate States for a year and a month. After early defeats at Bull Run and Wilson's Creek, the course of the war had been marked by great victories and wide conquests. In the western theater, Fort Donelson had fallen to "Unconditional Surrender" Grant, Nashville had been occupied by Buell, the battle of Shiloh had resulted in victory for the Union, the great port of New Orleans had been taken by Farragut. In the East, the mountain counties of western Virginia had been detached from the Old Dominion, the defenses of the North Carolina sounds had been breached, the deep water harbor of Port Royal in South Carolina had been occupied to provide a safe base for the blockaders of the Atlantic ports, and, most conspicuous of all, General McClellan's mighty Army of the Potomac had advanced up the Virginia Peninsula, pushing the Confederate defenders back almost into the outskirts of Richmond itself.

For the Union, the war had gone well in its first year, but it had been at a cost in suffering and death from wounds and disease at which the people were appalled. The Nation had gone to war in traditional hip-hip-hurrah fashion, with little regard for the visible dangers of the battlefield and even less regard for the invisible but more deadly dangers of the diseases that lurked in the unclean camps.

Indeed, even if there had been a more realistic appreciation of these risks and dangers, there was not in the existing state of medical knowledge and military organization a great deal that could be done about them. Though anesthesia had been introduced in America some 15 years earlier, methods were still crude, and it was used with considerable misgiving. Bacteria were known to exist but had not yet been accepted as a cause of disease. Antiseptic surgery was still in the future, and asepsis was not yet even an ideal to be sought. The occurrence of pus in wounds or as a result of surgery was looked upon as part of the process of healing, a necessary suppuration.

### *Some Medical Problems of the 1860's*

Medical men were still divided into dogmatic schools of thought, according to the theoretical basis on which they practiced. The dominant school, the allopaths, depended upon the administration of powerful dosages of drugs to combat the supposititious causes of sickness or to neutralize its effects; the homeopaths believed in small doses of medicine, operating on the theory that "like cures like." The nature of the curative agents largely relied upon by the medical profession led Dr. Oliver Wendell Holmes to observe, in an address before the Massachusetts Medical Society in May 1860, that "if the whole *materia medica*, as now used, could sink to the bottom of the sea, it would be all the better for mankind—and all the worse for the fishes."

Dr. Holmes granted that there were exceptions to his sweeping condemnation, but his opinion as to the efficacy of much of the orthodox treatment of disease was warranted by the fact that methods of treatment were derived more from speculation and theory than from directed and controlled experimentation.

Even if there had been a more general recognition of the importance of experiment and scientific observation, there was, in America in the early 1860's, little of the apparatus or equipment for observation of even simple symptoms. Even such familiar tools of the physician as the clinical thermometer and the stethoscope were all but unknown and little used, and it was not until the war was half over that the headquarters of the Medical Department of the Army enjoyed the possession of an achromatic microscope, the basic working tool of the pathologist.

Not because of these lacks—for at the time they were not recognized as such—but because of the almost total lack of organized readiness for the removal and treatment of the wounded, the Medical Department of the Army came under criticism and condemnation. To many, the suffering of the sick, and especially of the wounded, seemed unnecessarily severe because of the failure of the Department to foresee the mounting needs of war and to organize to meet them. The charge against the Department was "stiff adherence to antiquated forms and modes of action outworn even for peace conditions."<sup>1</sup>

Whether the deficiencies of the Medical Department were greater than those of other staff departments of the Army may be questioned, and certainly the framework of the governing law, under which the Medical Department was compelled to rely on the quartermaster for transportation and hospital construction and upon the Commissary Department for subsistence, was faulty.

<sup>1</sup>Duncan, Louis C.: Evolution of the Ambulance Corps and Field Hospital, p. 4. In *The Medical Department of the United States Army in the Civil War*. Washington, 1911.

But the fact that medical shortcomings, real or supposed, manifested themselves in the sensitive area of human suffering and death made all the more glaring every instance of ineptitude, inadequacy, inefficiency, or just plain indifference.

That there were such instances goes without saying. How could it have been otherwise, when a department set up to care for the medical needs of an army of 16,000 men, with all its methods geared to the slow tempo and small-scale demands of peacetime, suddenly found itself called upon to care for an army rapidly growing to the million mark and engaged in an active and hard-fought war?

### *A New Surgeon General*

On 15 May 1861, the 80-year-old Thomas Lawson, Surgeon General of the Army since 1836, died. To succeed him, Clement Alexander Finley, veteran of more than 40 years' service in the Department, was named Surgeon General, to face the problems of an ever-expanding and hugely demanding war. In the opinion of the United States Sanitary Commission, an unofficial body with official recognition which was, in a sense, a forerunner of the American Red Cross, the new Surgeon General was too much devoted to routine, and lacked the flexibility of outlook, the largeness of concept, and the vigor in action which the situation required.

The Sanitary Commission pressed for passage by Congress of a bill enlarging and reorganizing the Medical Department of the Army, and likewise sought to have the 64-year-old Finley replaced as Surgeon General. In March of 1862, Finley fell afoul of the new Secretary of War, the imperious and irascible Edwin M. Stanton, and was forced to resign. In April, Congress passed, and President Abraham Lincoln signed, the bill reorganizing the Department and, on the 25th of the month, a new Surgeon General, William Alexander Hammond, was appointed (fig. 1).

The new Surgeon General, who was to become the father of the Army Medical Museum and, through it, of the Armed Forces Institute of Pathology, was less than 34 years old at the time of his appointment. His selection over officers who were his seniors in age, rank, and experience was due in large measure to the recommendation and persistent pressure of the Sanitary Commission, which had been impressed by the tireless energy and high administrative ability he had exhibited in the organization and operation of hospitals in Maryland and western Virginia.<sup>2</sup>

<sup>2</sup> Adams, George Washington: Doctors in Blue: The Medical History of the Union Army in the Civil War. New York: Henry Schuman, Inc., 1952, pp. 28-31.



FIGURE 1.—Brig. Gen. William Alexander Hammond, The Surgeon General, U.S. Army, 1862-1864.

Dr. Hammond was born in Annapolis, Md., on 28 August 1828, was reared in Pennsylvania, and studied medicine in New York, where he received his degree at the age of 20. He passed the examination for entrance into the Army Medical Service and in 1849 became an assistant surgeon. In the next 10 years, he served as medical officer at various frontier posts and also at West Point. He took advantage of a sick leave spent in Europe to study in the medical

centers there. Returning to duty, he submitted a report on a nutritional research project of his own which won for him an American Medical Association prize in 1857. In the report on this study, in which Dr. Hammond had used himself as one of his "guinea pigs," he described himself as 6 feet 2 inches in height; from 215 to 230 pounds in weight; of a rather full habit of body; and disinclined to exercise for its own sake.

In the autumn of 1860, the future Surgeon General resigned from the Army to take the chair of anatomy and physiology at the medical school of the University of Maryland in Baltimore, but upon the outbreak of hostilities he had resigned his professorship and re-entered the Army, coming in as a lieutenant at the bottom of the promotion list, without credit for his 10 years of previous service.<sup>3</sup>

### *The Scientific Approach*

The new Surgeon General faced a mountain of problems of medical supply and administration, but he saw beyond these to the basic questions of the practice of military medicine and surgery. Within less than a month after taking office, therefore, the new Surgeon General, seeking more complete and accurate knowledge of actual conditions, issued his Circular No. 2 on 21 May 1862 (fig. 2).

This circular prescribed in detail the requirements of the "remarks" which were to accompany the monthly Reports of Sick and Wounded. Full information was called for as to fractures, gunshot wounds, amputations, and exsections by the surgeons. On the medical side, information was sought not only as to symptoms and treatment of fevers, diarrhea and dysentery, scorbutic diseases, and respiratory diseases, but also as to shelter and sanitary conditions, and as to the character and cooking of the ration, rightly regarded as factors in the causation and severity of sickness.

Almost as an afterthought, the circular announced in its closing paragraph the intention to create a medical museum. "As it is proposed to establish in Washington, an *Army Medical Museum*," the circular read, "Medical officers are directed diligently to collect, and to forward to the office of the Surgeon General, all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable; together with projectiles and foreign bodies removed, and such other matters as may prove of interest in the study of military medicine or surgery. These objects should be accompanied by short explanatory notes.

<sup>3</sup> Drayton, Evelyn S.: William Alexander Hammond, 1828-1900; Founder of Army Medical Museum. *The Military Surgeon* 109: 559-565, October 1951.

## ARMED FORCES INSTITUTE OF PATHOLOGY

## SURGEON GENERAL'S OFFICE,

WASHINGTON CITY, May 21, 1862.

[CIRCULAR No. 2.]

In the monthly Reports of Sick and Wounded, the following details will be briefly mentioned in accompanying remarks :

## SURGERY.

*Fractures.*—The date of reception, the situation, character, direction, treatment and result in all cases.

*Gunshot wounds.*—The date of reception, the situation, direction, and character; the foreign matters extracted (if any); and the result in all cases.

*Amputations*—The period and nature of the injury; the character of the operation; the time, place, and result.

*Exsections*—All operations for, with a statement of the injury demanding them; the date of injury, the date of operation; the joint or bone operated upon, and the result.

## MEDICINE.

*Fever.*—Their character and symptoms; an outline of the plans of treatment found most efficient, with remarks on the location and sanitary condition of camps, or quarters, during the prevalence of these disorders.

*Diarrhaea and Dysentery.*—Grade, and treatment, with remarks on the character of the ration, and the modes of cooking.

*Scorbutic Diseases.*—Character and symptoms, with observations on causation, and a statement of the means employed to procure exemption.

*Respiratory Diseases.*—Symptoms, severity, and treatment, with remarks on the sheltering of the troops, and the atmospheric conditions.

Similar remarks on other preventable diseases.

Important cases of every kind should be reported in full. Where post-mortem examinations have been made, accounts of the pathological results should be carefully prepared.

As it is proposed to establish in Washington, an *Army Medical Museum*, Medical officers are directed diligently to collect, and to forward to the office of the Surgeon General, all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable; together with projectiles and foreign bodies removed, and such other matters as may prove of interest in the study of military medicine or surgery.

These objects should be accompanied by short explanatory notes.

Each specimen in the collection will have appended the name of the medical officer by whom it was prepared.

WILLIAM A. HAMMOND,

*Surgeon General*

NOTE.—Medical Directors will furnish one copy of this circular to every medical officer in the department in which they are serving; and they will hereafter forward to this office with their consolidated monthly reports, all the monthly reports of the medical officers under their supervision. They will also immediately transmit, all back monthly reports, and papers of every kind relating to the above subjects of medicine and surgery, which may have accumulated in their respective offices since the commencement of the rebellion.

FIGURE 2.—Surgeon General Hammond announces his intention to establish the Army Medical Museum, 21 May 1862.

Each specimen in the collection will have appended the name of the medical officer by whom it was prepared.”<sup>4</sup>

Three weeks earlier, on 1 May, General Hammond had procured, from the Adjutant General of the Army, orders for Assistant Surgeon Joseph Janvier Woodward, on duty with the Army of the Potomac, and Brigade Surgeon John Hill Brinton of the Volunteers, on duty with the Army of the Mississippi, to report to the Office of the Surgeon General for special duty. The nature of this duty was disclosed in part, on 9 June 1862, in Circular No. 5 (fig. 3). “It is intended,” the circular read, “to prepare for publication the Medical and Surgical History of the Rebellion,” with responsibility for the medical portion of the work assigned to Dr. Woodward and for the surgical part to Dr. Brinton, and with all medical officers called upon for cooperation (fig. 4).<sup>5</sup>

### *The First Curator*

Meanwhile, The Surgeon General was maturing his plans for a medical museum, and on 1 August 1862, he gave to Surgeon Brinton the go-ahead sign, directing him “to collect and properly arrange in the ‘Military Medical Museum’ all specimens of morbid anatomy, both medical and surgical, which may have accumulated since the commencement of the Rebellion in the various U.S. hospitals, or which may have been retained by any of the Medical officers of the Army.” Dr. Brinton was also directed to “take efficient steps for the procuring hereafter of all specimens of surgical and medical interest that shall be afforded in the practice of the different hospitals” and to report the name of any officer who might decline or neglect to furnish such materials.<sup>6</sup>

The 30-year-old Brinton had been a demonstrator of anatomy at the Jefferson Medical College in Philadelphia and had served with General Grant in the West. At Fort Donelson, under the direction of Surgeon H. S. Hewitt, he had put together the first combination of regimental hospitals and ambulances into brigade organizations, foreshadowing the broader and more comprehensive groupings for evacuation and treatment of the wounded to be worked out later in the same year of 1862 by Surgeon Jonathan Letterman, Medical Director of the Army of the Potomac.<sup>7</sup>

<sup>4</sup> Circular No. 2, Surgeon General’s Office, Washington City, May 21, 1862. On file, National Archives, Accession No. 421, Circulars/SGO/1862-1865.

<sup>5</sup> (1) Special Orders Number 98, War Department, Adjutant General’s Office, 1862. (2) Circular No. 5, Surgeon General’s Office, Washington, D.C., June 9, 1862. On file, National Archives, Accession No. 421, Letter Book No. 30, March 7 to May 30, 1862/SGO, p. 319.

<sup>6</sup> Brinton, John Hill: Personal Memoirs. New York: The Neale Publishing Co., 1914, pp. 180-181.

<sup>7</sup> (1) Duncan, *op. cit.*, The Battle of Bull Run, p. 21. (2) Duncan, *op. cit.*, Evolution of the Ambulance Corps and Field Hospital, pp. 2-4.

**Circular No. 5.****Surgeon General's Office,**

WASHINGTON, D. C., June 9, 1862.

It is intended to prepare for publication the Medical and Surgical History of the Rebellion.

The Medical portion of this work has been committed to Assistant Surgeon J. J. WOODWARD, United States Army, and the Surgical part to Brigade Surgeon JOHN H. BRINTON, United States Volunteers.

All medical officers are therefore requested to co-operate in this undertaking by forwarding to this Office such sanitary, topographical, medical and surgical reports, details of cases, essays, and results of investigations and inquiries as may be of value for this work, for which full credit will be given in the forthcoming volumes.

Authority has been given to both the above named gentlemen to issue, from time to time, such circulars as may be necessary to elicit the desired facts, and the medical officers are desired to comply with the requests which may thus be made of them.

It is scarcely necessary to remind the medical officers of the regular and volunteer services that through the means in question much may be done to advance the science which we all have so much at heart, and to establish landmarks which will serve to guide us in future.

It is therefore confidently expected that no one will neglect this opportunity of advancing the honor of the service, the cause of humanity, and his own reputation.

**WILLIAM A. HAMMOND,***Surgeon General, U. S. Army.*

FIGURE 3.—Circular No. 5, Surgeon General's Office, 9 June 1862.

Dr. Brinton (fig. 5) warmly welcomed the order to collect, for study, specimens of damaged or diseased tissues. Indeed, he had anticipated the order of 1 August by writing on 28 July to the medical officers in charge of hospitals at St. Louis, Mo., Cincinnati, Ohio, Baltimore, Md., Philadelphia, Pa., Mound City, Ill., and Winchester, Va., directing that all specimens be collected and forwarded. Immediately after the issuance of The Surgeon General's order, he addressed similar letters asking the cooperation of the officers in charge of



FIGURE 4.—This group of U.S. Army medical officers includes several who were to be prominent in the history of the Army Medical Museum and the Library of The Surgeon General. Standing (left to right): Lt. Col. William G. Spencer, Assistant Surgeon Alfred A. Woodhull, Surgeon General Joseph K. Barnes, Assistant Surgeon Edward Curtis. Seated (left to right): Assistant Surgeons George A. Otis, Charles H. Crane, John S. Billings, and Joseph J. Woodward. (From an original glass negative dated 1864 in the AFIP files.)

hospitals at Alexandria, Falls Church, and Culpeper Court House, Va., and at Memphis, Tenn.<sup>8</sup>

"My whole heart was in the Museum," he wrote afterward, "and I felt that if the medical officers in the field, and those in charge of hospitals, could only be fairly interested, its growth would be rapid and the future good of such a grand national cabinet would be immense. By it the results of the surgery of this war would be preserved for all time, and the education of future generations of military surgeons would be greatly assisted."

During his period of service as Curator, Dr. Brinton visited the field hospitals after the great battles in the East—Antietam or Sharpsburg, Fredericksburg,

<sup>8</sup> Record of John Hill Brinton's Action in the Matter of the Military Medical Museum. On file in historical records of AFIP; letters of 28 July, 7, 9, 12, 18, and 19 August 1862.



FIGURE 5.—Maj. John Hill Brinton, U.S. Volunteers, first Curator of the Army Medical Museum, 1862-1864.

Chancellorsville, Gettysburg—seeking to enlist the interest of the surgeons with the armies, to develop a “true professional interest” in the Museum as an opportunity to contribute to the “common stock of surgical knowledge” and

to convince the skeptical that the formation of a "great National Surgical and Medical Museum was not for the collection of curiosities, but for the accumulation of objects and data of lasting scientific interest, which might in the future serve to instruct generations of students, and thus in time be productive of real use."<sup>9</sup>

Dr. Brinton could hardly have foreseen that future generations of students would come to look upon many of the medical and surgical practices of the Civil War as curiosities carried over from the Middle Ages of medicine, but in his prediction that the institution which he was launching would "in time be productive of real use" he was abundantly correct—for the Medical Museum has broadened into the Institute of Pathology, serving not only the Armed Forces but, through its unique relation with the civilian specialist, serving the needs and pacing the progress of all pathology.

### *Collecting Specimens*

Many of the Army surgeons of 1862 "entered into the scheme of the Museum with great zeal and earnestness," Dr. Brinton wrote afterward, "but some few there were, and these mostly the least educated, who failed to see its importance." In time, however, the project received "active and faithful co-operation" from the medical staff generally.

The chief difficulty encountered at first was in the field hospitals where, after battles, the medical forces were overwhelmed with the bloody work of operating under conditions and pressures which did not permit the preparation of specimens with their accompanying case histories.

"It really seemed unjust," Dr. Brinton noted, "to expect [under such circumstances even] the rough preparation necessary to preserve for the Museum the mutilated limbs." Consequently, the Curator adopted the practice of visiting the battlefields (fig. 6) where he had dug out of the trenches in which they had been buried "many and many a putrid heap" of legs and arms on which he went to work "amid surrounding gatherings of wondering surgeons and scarcely less wondering doctors." All saw, he said, that he was in earnest and as his infectious example spread from corps hospital to corps hospital, "active co-operation was eventually established."

In his visit to the Army of the Potomac, after the battle of Fredericksburg, Dr. Brinton was accompanied by Dr. William Moss, the Assistant Curator, the purpose of the trip being to assist in caring for the wounded and also to "look

<sup>9</sup> Brinton, *op. cit.*, pp. 181, 186.



FIGURE 6.—Surgeon John H. Brinton (front row, center), with a group of Union Army officers in the field.

after the interests of the Museum." On the afternoon of 15 December, Dr. Brinton "encountered Dr. Moss, my assistant, bringing with him an immense number of surgical specimens for the Museum, some of these in boxes, which we sneaked over in the wagons; the remainder were carried in great bags on the backs of one or two very black negroes." Upon his return from the field, the Curator sent his assistant back "down to the army for more" specimens. "By this time," he said, "the surgeons generally were becoming interested in the Museum project, and were taking pains to get and preserve what they could for the collection."<sup>10</sup>

To spare the field surgeons as much as possible in the preparatory work, the Museum issued "Suggestions to the Medical Officers of the Army as to the Preparation and Forwarding of Specimens to the Army Medical Museum, Surgeon General's Office, Washington, D.C." After a listing of the types of "specimens illustrative of surgical injuries and affections" and the "specimens of diseases" which were desired, the Suggestions continued: "It is not intended to impose on medical officers the labor of dissecting and preparing the specimens

<sup>10</sup> *Ibid.*, pp. 186, 187-188, 214, 220, 222.

they may contribute to the Museum. This will be done under the superintendence of the Curator."

Instructions for forwarding "such pathological objects as compound fractures, bony specimens, and wet preparations generally, obtained after amputation, operation or cadaveric examination" included rough removal of all unnecessary soft parts, wrapping in cloth so as to preserve all spicula and fragments, attaching a tag of wood or sheet lead bearing the number of the specimen and the name of the officer sending it, and immersing the object in a keg or small cask of diluted alcohol or whisky. When filled, the cask was to be forwarded to the Office of the Surgeon General by express, collect. At the same time, a corresponding list or history of the cases was to be mailed to The Surgeon General.

To facilitate the collection of specimens, the following medical officers at major hospital centers were designated to receive and forward them:

Surgeon Lavington Quick, U.S. Volunteers, Baltimore

Acting Assistant Surgeon Edward Hartshorne, U.S. Army, Philadelphia

Acting Assistant Surgeon George Shrady, U.S. Army, New York

Surgeon M. Goldsmith, U.S. Army, Louisville

Assistant Surgeon F. L. Town, U.S. Army, Nashville

Surgeon John S. Hodgen, U.S. Army, St. Louis

Surgeon H. S. Hewitt, U.S. Volunteers, Army of the Mississippi<sup>11</sup>

In acknowledging receipt of specimens submitted in response to circular letters and individual communications, Dr. Brinton, upon occasion, inquired as to particular cases of which he had knowledge. For example, in a letter of 17 December 1862, thanking Surgeon John S. Hodgen at St. Louis, Mo., for his contributions, Brinton mentioned that he had not seen among them "one of a gunshot wound of the ear which occurred at Fort Donelson and was treated in the Hospital under your charge last winter," and asked for the specimen and also for "the round ball which inflicted the injury should it be in your possession." Not every wounded man was willing to give up the severed portion of his anatomy or the projectile by which he was struck. As an instance of this occasional unwillingness, there is the case of Pvt. W. H. Knaup of the 2d New Jersey, who was struck by a shell fragment in the left cheek and lost the angle of his jaw. Brinton wrote the surgeon in charge of the hospital at Chester, Pa., to which Knaup had been removed, to "make him

<sup>11</sup> Catalogue of the Army Medical Museum, Surgeon General's Office, Washington, January 1, 1963, pp. 5, 6.

give up the shell by which he was struck and the loose angle of jaw for the Army Museum," adding, "Keep every specimen you can."

Some of the operating surgeons, through ignorance or misunderstanding of orders, believed that the specimens resulting from their operations were their own to dispose of as they saw fit. One such instance was that of Surgeon R. B. Bontecou, of the hospital at Beaufort, S.C., who, while on duty in the Peninsula, collected between 70 and 80 preparations which he gave to Dr. Thomas M. Markoe of New York. Brinton wrote to the recipient of the gift, explaining that "all the specimens collected by medical officers belong to the national museum" and calling for the return of those which had been transferred to him by Surgeon Bontecou "under the mistaken impression that he possessed the right to part with them." There is no record of the receipt of anything from Dr. Markoe, but eventually Dr. Bontecou contributed 101 specimens. And then there was at least one case of outright theft of specimens by "the men who had charge of the dead house" at a general hospital, and the sale of the specimens to a New York physician.<sup>12</sup>

In spite of early indifference and the very real difficulties of collection, the specimens came in, even though the case histories which were to have accompanied them were frequently lacking. Enough material had been received by the end of 1862 to warrant the issuance of a small catalog in January 1863 (fig. 7). In a covering letter to Surgeon General Hammond, the Curator noted that "all the contained specimens," numbering 1,349 objects, had been collected since the Museum's establishment in August and the number was "being daily augmented." Of the objects cataloged, 985 were surgical specimens, 106 were medical, and 103 were missiles, "for the most part extracted from the body." Through the cooperation of the Ordnance Department of the Army, the Museum was enabled to display also a series of projectiles for small arms, field and heavy guns, and a set of the bayonets in use in the United States and foreign countries.

This first catalog of the Museum was "offered simply as a numerical list of the objects" in the collection with no attempt to classify the various injuries or to describe in detail the preparations included.

Of the nearly 1,000 surgical specimens listed, all but a handful were the result of gunshot wounds, and the vast majority of those were from the

<sup>12</sup> (1) Record of John Hill Brinton's Action in the Matter of the Military Medical Museum, pp. 11, 22, 52, 59. On file in historical records of AFIP; letters of 28 July, and 7, 9, 12, 18, and 19 August 1862.

(2) Lamb, Dr. D. S.: A History of the Army Medical Museum, 1862-1917, compiled from the Official Records. Mimeographed copy in historical records of AFIP, pp. 8, 9.

NO. OF SPEC'N.	DESCRIPTION.	NAME OF CONTRIBUTOR.
72 *	Gunshot fracture of upper third shaft of Tibia.	Surg. J. H. Brinton, U.S.V.
73 *	Gunshot fracture, comminuted; perforation of Humerus.	A. Asst. Surg. W. W. Keen, U. S. A., Gen'l Hosp. No. 1, Frederick, Md.
74 *	Shell contusion of Tibia; great suppuration.	A. Asst. Surg. D. W. Cheever, U. S. A., Judiciary Hosp., Washington, D.C.
75 *	Gunshot fracture, comminuted, of shaft of Femur.	Dr. Bowles, Waters' Warehouse, Georgetown, D. C.
76	Gunshot fracture of Femur; perforation above condyles.	Surg. C. H. Page, U. S. A.
77	Gunshot fracture of condyles of Femur; deposit of callus.	
78	Gunshot fracture of upper half and neck of Humerus.	
79 *	Gunshot fracture of upper half shaft of Tibia and Fibula.	Asst. Surg. S. A. Sterrow, U.S.A., Eckington Hosp., Washington, D. C.
80	Gunshot fracture of Tarsus and lower extremity of Tibia and Fibula.	Dr. Warner, Waters' Warehouse, Georgetown, D. C.
81	Gunshot fracture of Fibula.	
82 *	Gunshot fracture of lower extremity of Radius.	
83 *	Gunshot fracture of Fibula; with deposit of callus.	
84	Gunshot fracture of Fibula.	
85 *	Gunshot fracture of Fibula; of ball perpendicular.	
86	Gunshot fracture of Fibula; carpal bones and Ulna.	
87 *	Gunshot fracture of Fibula; with conoidal bullet.	
88 *	Gunshot fracture of Fibula; with conoidal bullet.	
89 *	Gunshot fracture of Fibula; carpal bones.	
90	Gunshot fracture, comminuted; upper half of Humerus.	
91 *	Gunshot fracture of Fibula.	
92 *	Gunshot fracture of Fibula; with amputation of tarsus.	
93 *	Gunshot fracture; comminuted; process and head of Fibula.	
94	Gunshot fracture; extending one-half inch of shaft of Humerus.	
95	Gunshot fracture of Fibula; Ethmoid, and Ulna.	
96	Gunshot fracture of Fibula; Humerus.	
97	Gunshot fracture of Fibula; third, fourth, and fifth metatarsal bones.	
98	Gunshot fracture of Carpus; amputation.	
99 *	Gunshot fracture of lower half of Femur.	

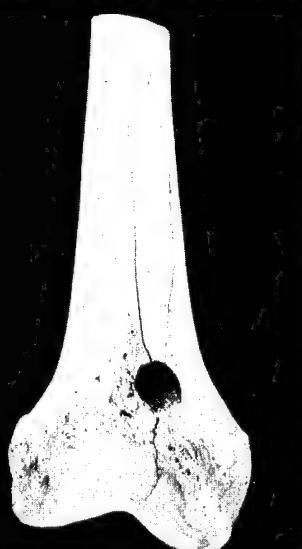


FIGURE 7.—A page from the first Catalogue of the Army Medical Museum. The specimen shown is the one listed as No. 76 in the catalogue.

conoidal bullets devised by Capt. C. E. Minié of the French Army and widely adopted by both sides in the Civil War. Comparatively few American surgeons had had experience with gunshot wounds, and fewer still had so much as

seen wounds made by Minié balls—hence the emphasis upon such specimens in what soon came to be the largest collection of such specimens in the world.

Some 30 of the specimens other than gunshot wounds were from reamputations or other secondary operations. Two were from victims of railroad accidents; one was the result of a kick by a horse. Only two were saber wounds, and there were no instances of wounds by the bayonet. One specimen was from a case of gangrene of the face attributed to salivation—a condition resulting from excessive dosage of calomel or other mercurial drugs. The most numerous single disease listed as the cause of the lesions shown in the specimens was typhoid fever, designated in 17 cases. The most frequently mentioned disease was "Chickahominy diarrhoea," 10 cases. The Museum's specimens, as they may be observed in its original catalog, were illustrative of the effects of military action and camp conditions upon the life and health of the soldier.<sup>13</sup>

The work of preserving the specimens and preparing them for museum purposes was done at the Museum by a professional anatomical "preparator," Frederic Schafhirt, assisted by his son, Adolph, and later, also by his son, Ernst. The senior Schafhirt, who bore the courtesy title of "Doctor," was born and trained in Germany and had been an assistant in anatomical work for Dr. Joseph Leidy of the University of Pennsylvania.

The preservative commonly used was alcohol diluted in strength to 70 percent. This alcohol was secured by re-distilling the illicit liquors seized and confiscated by the provost marshal of Washington, a source of supply which was found adequate for Museum purposes for some years. Dr. Brinton recalled afterward that the side lot of the Museum was "piled with kegs, bottles, demijohns and cases, to say nothing of an infinite variety of tins, made so as to fit unperceived on the body, and thus permit the wearer to smuggle liquor into camp."

Among the more ingenious of these containers, according to the recollection of another officer assigned to the Museum, were false breasts, each holding a quart or more, worn by women who were arrested as they sought to cross the Long Bridge, carrying liquor to the camps.<sup>14</sup>

<sup>13</sup> Catalogue of the Army Medical Museum, Surgeon General's Office, Washington, January 1, 1863, *passim*.

<sup>14</sup> (1) Lamb, *op. cit.*, pp. 4, 5, 25. (2) Brinton, *op. cit.*, pp. 181-182, 191.

### *New Quarters for the Museum*

During these early months of the Museum's life, its quarters were moved twice. The first move was from the "top of my desk," as Brinton wrote, to some "shelves put up for the purpose in my rooms in the Surgeon-General's office," then located in the old Riggs Bank Building (fig. 8) at the corner of President Place (now Pennsylvania Avenue) and 15th Street, NW., Washington, D.C. From these shelves, on the second floor rear of the bank building, the growing collection was soon removed to rooms in a building at 180 Pennsylvania

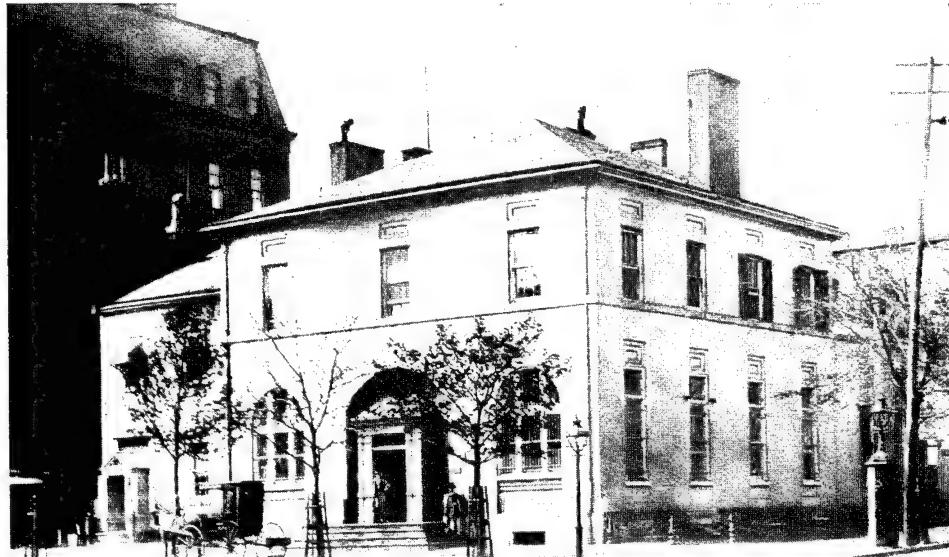


FIGURE 8.—The first home of the Museum.

Avenue, NW., which stood on lots since numbered as 1719-1721 (fig. 9). While in this building, the first catalog was issued, but as increasing numbers of specimens came in from the hospitals and the field, new and larger quarters were imperatively demanded.

While he and Dr. Woodward were "pushing" on the medical and surgical history of the war, and compiling lists of sick and wounded, Dr. Brinton was scouting Washington, on the lookout for suitable quarters for the growing Museum. The only place he could find that was both suitable and available was a building on H Street, NW., between 13th and 14th Streets, opposite the New York Avenue Presbyterian Church. The building, which belonged to the Washington philanthropist, W. W. Corcoran, is variously described in con-



FIGURE 9.—The second home of the Museum.

temporary documents as a "mechanics' library," the "Library Building occupied by Miss Middleton's School," and "the Art Gallery Building." It might have been intended for use by the subsequently famous Corcoran Gallery of Art, but

it was in use as a school and was known as "Mr. Corcoran's School House" when it was taken over by the Government. Mr. Corcoran agreed to put the building in repair and rent it for \$1,000 a year. The proposition was accepted by the Curator, and on 16 May The Surgeon General asked permission of Secretary Stanton to rent the building on these terms, the rent to be paid out of an appropriation of \$5,000 for the Museum which had been made at the closing session of the Congress.

On 21 May, the Secretary of War directed that the Military Governor of Washington, Maj. Gen. Ethan Allen Hitchcock, take possession of the building and turn it over to the Medical Department of the Army for the use of the Medical Museum, which was done in Special Orders No. 116, Headquarters, Military District of Washington, on 22 May 1863.

Dr. Brinton stated in a letter of 24 August to Col. Joseph K. Barnes, Medical Inspector and Acting Surgeon General, that Secretary Stanton had ordered that "no rent will be paid for the building" owned by Mr. Corcoran, but regardless of rent or no rent, the Medical Department took possession of "the building known as Corcoran's School House near Dr. Gurley's Church, together with its outbuildings thereto, having been turned over to this department by order of Secretary of War" and on 1 June assigned the quarters to the Museum, directing Surgeon Brinton to "take charge thereof, and make such alterations and repairs as may be necessary to fit it for the purpose of the army Medical Museum." Brinton was cautioned, however, to "avoid all useless alterations or expense."<sup>15</sup>

Acting under this authorization, the Museum occupied the Corcoran building (fig. 10) as soon as the school term was over and put it in complete repair at a cost, including new cases for exhibits, of nearly \$2,000. On 24 August, the Curator reported the building "as ready for the reception of the collection" which by that time had grown to an estimated 3,500 specimens. Already, Dr. Brinton reported to the Acting Surgeon General, "the collection of gunshot injuries alone is the largest in the world, exceeding in number and value that of the British Government at Netley (formerly at Fort Pitt, Chatham), and far surpassing the French Museum at Val-de-Grace, founded by Baron Larrey."<sup>16</sup>

<sup>15</sup> (1) National Archives, War Department Records, Adjutant General's Office, Miscellaneous 294, Accession Number 421, SG Letter Book Number 4, Surgeon General's Office, p. 198. (2) Brinton, *op. cit.*, pp. 182-184. (3) Lamb, *op. cit.*, pp. 16, 17, 19-21. (4) Lamb, D. S.: Army Medical Museum, Washington, D.C. *The Military Surgeon* 53: 99, 101, August 1923. (5) W. W. Corcoran Papers. On file in Manuscript Division, Library of Congress, Letter Press Copy Book, volume 22, pp. 269, 410.

<sup>16</sup> (1) Original letter, John Hill Brinton to Joseph K. Barnes, 24 August 1863. On file in historical records of AFIP. (2) Lamb, *op. cit.*, pp. 19, 20. (3) Lamb, *The Military Surgeon*, 53 (1923), pp. 101, 102. (4) Brinton, *op. cit.*, pp. 183, 184.

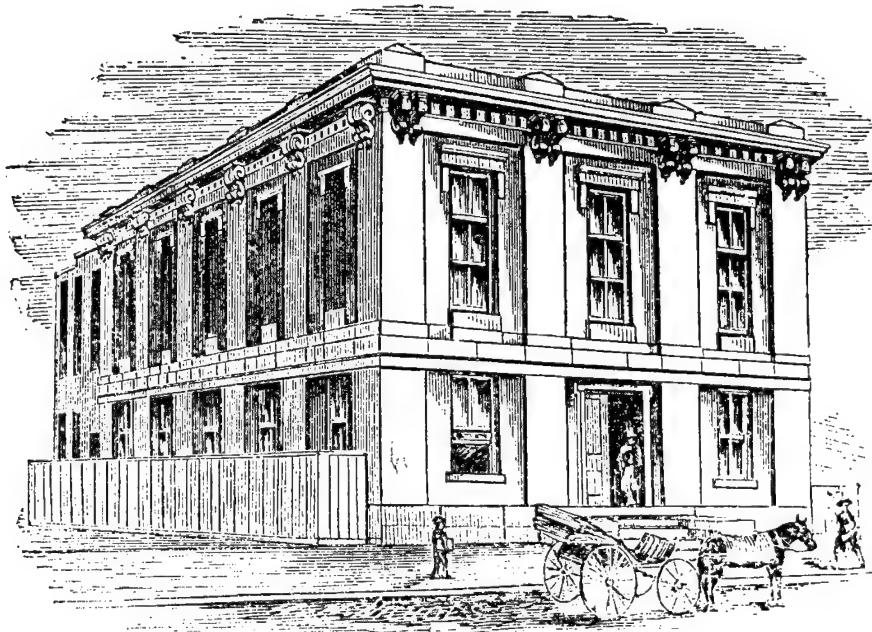


FIGURE 10.—The third home of the Museum. Picture is from an engraving by H. H. Nichols of the Museum staff.

### *Grounds for Anxiety*

Apparently, judging from the anxious tone of Brinton's letter of 24 August 1863 to Col. Joseph K. Barnes, the Acting Surgeon General, there was some apprehension that the Museum project might be caught in the backwash of the increasingly bitter differences between Surgeon General Hammond and the Secretary of War. These differences between two men of powerful personality and clashing temperament had progressed to the point, by 2 July 1863, that a special commission of three civilians was appointed to scrutinize The Surgeon General's papers, seeking cause for his removal. The Surgeon General had added to the ranks of his opponents by the issuance, on 4 May 1863, of his Circular No. 6 striking calomel and tartar emetic from the list of Army medical supplies—an action which outraged many physicians who were accustomed to use calomel as a standard medication, if not as a sovereign remedy. Before the month of August was out, Hammond was ordered out of Washington on a vague and ill-defined mission of inspection in the South with headquarters at New

Orleans, whence he was to report to the Secretary every 10 days, while Colonel Barnes acted as Surgeon General.<sup>17</sup>

It was obvious that the Secretary of War was determined to be rid of the innovating and independent Hammond, and it might well have been apprehended that this determination extended beyond the person of the unwanted Surgeon General to all his works, as well. At any rate, Curator Brinton, while disclaiming any need for such representations, urged upon Acting Surgeon General Barnes that the plan for the Museum be carried out. "It is unnecessary for me, Colonel," he wrote, "to urge upon you the value of our National Medical Museum. Its claims to usefulness are recognized by the civil profession throughout the country and it is by them weekly and almost daily considered. The cabinet as it stands is not a mere Museum of curiosities. It is a collection which teaches."

"It is practical," he continued, "and has already powerfully influenced for the better the treatment of the wounded soldier." In confirmation, he called to mind the lessons to be deduced, from the study of the specimens of the Museum, as to injuries of the joints from conoidal balls, "a class of injuries previously almost unknown and the treatment of which, at the commencement of the war, was unsettled."

The proposed arrangement of the Museum in its new quarters, he added, would open the collection to the study of every surgeon, civil as well as military. Only in this way, he said, could a true knowledge of the treatment of wounds caused by modern projectiles be diffused. Concluding, he referred to the loss which would occur if the plans for the Museum should be changed. "I know of no other suitable building for the purposes of the Museum," he wrote, "and even should one be found, the fund at command would be utterly insufficient to make a second time the alterations and repairs which would be absolutely necessary."

Dr. Brinton's argument against scuttling the plan for removal of the Museum to its new and larger quarters was successful, for on 1 September Colonel Barnes was notified that the Secretary of War had "authorized the transfer of the specimens from the room in the Surgeon General's office to the Museum newly selected."<sup>18</sup>

<sup>17</sup> (1) Duncan, Louis C.: The Strange Case of Surgeon General Hammond. *The Military Surgeon* 64: 107-108, January 1929. (2) Ashburn, Percy M.: Gleanings from Medical Department History. *Military Surgeon* 64: 449, March 1929. (3) Drayton, Evelyn S.: William Alexander Hammond, 1828-1900; Founder of Army Medical Museum. *The Military Surgeon* 109: 563, October 1951.

<sup>18</sup> (1) Original letter, John Hill Brinton to Joseph K. Barnes, 24 August 1863. On file in historical records of AFIP. (2) Lamb, *op. cit.*, pp. 19-21. (3) Lamb, *The Military Surgeon*, 53 (1923), pp. 101-102.

### *Plans for an Army Medical School*

Dr. Brinton was less successful in the attempt to establish a school of military medicine and surgery in the Museum. On 24 September 1863, four young Army medical officers then on duty in Washington, some of them being connected with the Museum and "wishing to make that institution at once practically useful," asked Acting Surgeon General Barnes for "permission to deliver a course of lectures on military medicine and surgery in the hall of the Museum." Such a course would be particularly advantageous, they suggested, because of the large number of medical cadets and junior medical officers on duty in the hospitals in the Washington area. It was proposed to deliver the lectures in the evening so that they "would in no way interfere with the official duties of anyone concerned." The proponents of the course had all had experience in lecturing on medical subjects. "These lectures of course will be delivered free," the letter read, "and with the facilities afforded by the Museum would not be a source of any expense whatever to the Government."

The officers who thus proposed what would have been the first school of the sort were: Doctors Brinton and Woodward, Dr. Roberts Bartholow, and Dr. D. W. Bliss. Others who were to have lectured included Surgeons John A. Lidell and A. C. Hamlin, Assistant Surgeon William Thomson, of the Volunteers, and Surgeon Richard H. Coolidge of the Regular Army, who was to have taught the customs of the service and military medical ethics.

The Acting Surgeon General submitted the proposition to the Secretary of War, who said he would decide the matter the next day. Surgeon Brinton tells the story:

On the morrow, about nine o'clock, on his drive from his home to the war office, he [the Secretary] stopped at the Museum Building, descended from his carriage, ran hastily through the Museum rooms, looked angrily at the dear little lecture room, stamped his foot, growled, "Ugh," drove to his office, sent for Acting Surgeon General Barnes and said sharply to him, "Are these lectures to be given in the evenings?" To an affirmative reply, he growled, "They will go to the theatre and neglect their duties. It shan't be," and thus was the end of a favorite plan for doing some good for the Medical Corps of the Army, and for disseminating a more correct and general knowledge of military medicine and surgery.<sup>19</sup>

And, it might be added, it was to be another 30 years before the idea of an Army Medical School was to come to fruition.

<sup>19</sup> (1) Original letter, John Hill Brinton to Joseph K. Barnes, 24 September 1863. On file in historical records of AFIP. (2) Lamb, *op. cit.*, pp. 23-25. (3) Lamb, *The Military Surgeon*, 53 (1923), pp. 103, 104. (4) Brinton, *op. cit.*, pp. 258-259.

### *The Museum's Collections Grow*

However disappointed Brinton and Woodward may have been at Secretary Stanton's brusque dismissal of their promising plan, they still enjoyed the support of Acting Surgeon General Barnes both in their work on the "History" and on the Museum project. On 25 November 1863, and again on 24 June 1864, Dr. Barnes issued circular letters to all medical officers in aid of the Museum. In the first letter, he invited attention to the possibilities of illustrations and representations of the results of surgical operations by means of plaster casts which, it was said, could "in many instances be conveniently obtained—without subjecting the patient to the slightest inconvenience." It was suggested that cases in which the results of the operation had been unfavorable would be as "instructive and valuable for future reference and study" as those which had resulted favorably.

The 1864 circular of Acting Surgeon General Barnes directed medical officers in charge of hospitals "to diligently collect and preserve for the Army Medical Museum all pathological specimens which may occur in the hospitals under their charge." Listing the types of objects desired, the circular contained directions for forwarding them to the Surgeon General's Office, substantially repeating and reinforcing the "Suggestions" printed in the 1863 Catalogue of the Museum.<sup>20</sup>

Under the stimulus of these orders, and as a result of the missionary efforts of the Museum staff, specimens continued to come in, particularly after the great battles. Two barrels, filled with the gruesome materials resulting from the work of the surgeons, were sent in by a member of the Museum staff after Gettysburg.

One specimen from that battle which came in, without need of orders from The Surgeon General or solicitation by Museum staff members, was an amputated leg, received in a small coffin-like box, bearing the visiting card of the donor with the message, "With the compliments of Major General D. E. S." Gen. Daniel E. Sickles, whose leg it was or had been, combined a keen sense of self-advertisement with a high estimation of the importance and interest attached to the severed anatomy of the commanding general of the III Corps. That he was correct in his estimate is evidenced by the fact that even today

<sup>20</sup> (1) Circular Letter, Surgeon General's Office, June 24, 1864. On file in National Archives, War Department Records. (2) Lamb, *op. cit.*, pp. 25A, 25B, 28, 29. (3) Lamb, *The Military Surgeon*, 53 (1923), pp. 105-109.

the fractured bones of the Sickles' leg attract the interest of visitors to the public exhibits of the Museum (fig. 11).<sup>21</sup>

### *Hammond In Exile*

Throughout the last half of 1863, the Medical Department of the Army was in the anomalous state of having two heads—the titular Surgeon General Hammond, who was in official exile away from the seat of government, and Acting Surgeon General Barnes, in charge of affairs at the Capital. Determined to put an end to this situation, Hammond demanded reinstatement in his office or trial by court-martial. Permitted to return to Washington, he arrived on 15 January 1864, to be placed in arrest on the 17th, and ordered to trial, beginning the 19th, on charges of irregularities in the procurement of supplies and falsehood. Hammond sought a postponement to allow preparation of his defense, but it was denied him, and he was forced to proceed to trial in 48 hours on charges and specifications which had required 6 months to prepare. The ensuing trial ran for nearly 4 months, accumulated a record of 2,500 pages, and resulted in a verdict of guilty and a sentence of dismissal from the Service, approved by the implacable Secretary of War and promulgated on 18 August.

Dr. Hammond, far from being crushed by the sentence, retained the respect of the medical profession, and went on to win new honors as one of the founders of the developing specialty of neurology, with a large and lucrative practice in New York City. Fifteen years after his dismissal, on 27 August 1879, by Act of Congress and action of the President, he was restored to the retired list of the Army with his rank of brigadier general, though, at his own request, without pay for the past, present, or future. In its report recommending such action, the Senate Committee summed up the evidence as follows:

A careful, unbiased and searching scrutiny of the evidence \* \* \* forces irresistibly the conclusion that the gravamen of all the charges save one (that of falsehood) was either disproved by the defense, abandoned by the prosecution, or eliminated by the findings of the court.

The single charge of which the gravamen was not found wanting by the Court, was in itself trifling, if not frivolous, and certainly insufficient in character and importance to arraign, try, convict, and pronounce sentence thereon, in the manner and form set forth.

Referring to Hammond's request that he not be awarded pay but only vindication, the Committee wrote:

Dearer and more precious to him than untold gold, the priceless treasure of reputation restored and reparation made at the hands of his countrymen; he was asked that his name

<sup>21</sup> (1) Brinton, John Hill: Address to the Graduates of the Army Medical School, March 13, 1896. Journal of the American Medical Association 26: 602, March 28, 1896. (2) Lamb, *op. cit.*, p. 18. (3) Lamb, *The Military Surgeon*, 53 (1923), p. 100.



FIGURE II.—The "Incredible" General Sickles and his leg bones.

be again inscribed upon the roll of honor in companionship with those brave men who had fought the good fight and rested on their unstained laurels.<sup>22</sup>

The verdict of the Senate Committee, concurred in by the Senate, the House of Representatives, and the President, that William Alexander Hammond deserved well of his country, has been accepted by all who are acquainted with the achievements of his 15 months in actual charge of the affairs of the Medical Department and with the circumstances surrounding his dismissal. In the face of indifference, and even obstinate opposition, he had initiated reforms and launched institutions which were to be of lasting benefit, and even his unfulfilled recommendations were to come to fruition in later years.

### *The Second Curator*

The change in surgeons general was followed, a month later, by the relief of Major Brinton from his duties in the Surgeon General's Office and also as Curator of the Medical Museum, and by orders for him to report to Assistant Surgeon General Robert C. Wood at Louisville, Ky., for assignment in the West. On 3 October, Dr. George Alexander Otis (fig. 12), who had been Brinton's assistant since July, was named as his successor and was to serve as Curator longer than any other individual.<sup>23</sup>

The new Curator, 34 years old, was from Massachusetts but had received his M.D. degree from the University of Pennsylvania, had studied in Paris, and had practiced for 2 years in Richmond, where he had founded and edited the *Virginia Medical and Surgical Journal*. From 1854 to the outbreak of the war, he had practiced in Springfield, where he had joined a Massachusetts regiment as surgeon. After 3 years' service, in which he had attracted the favorable attention of Charles Henry Crane, Assistant Surgeon General, he was assigned to the Museum.<sup>24</sup>

### *Reorganization of the Museum*

Upon his designation as Curator, the Surgical and Photographic Sections of the Museum were assigned to Dr. Otis, while the Medical and Microscopic

<sup>22</sup> (1) Duncan, Louis C.: The Strange Case of Surgeon General Hammond. *The Military Surgeon* 64: 98-110, January 1929, and 64: 252-262, February 1929. (2) Phalen, James M.: William Alexander Hammond. *Army Medical Bulletin*, Number 52, pp. 42-46, April 1940.

<sup>23</sup> (1) Special Orders Number 245, Adjutant General's Office. On file, National Archives, Accession Number 421. Letter Book Number 9, Military, Surgeon General's Office. (2) Brinton, *op. cit.*, pp. 307, 312, 313.

<sup>24</sup> Hume, Edgar Erskine: *Victories of Army Medicine: Scientific Accomplishments of the Medical Department of the United States Army*. Philadelphia: J. B. Lippincott Co., 1943, p. 81.



FIGURE 12.—Lt. Col. George A. Otis, the second Curator of the Army Medical Museum, 1864-1881.

Sections were continued under the exclusive control of Dr. Woodward, an arrangement which, according to Otis's report of 1 July 1865, was to work with "entire harmony and concert of action" between the respective departments. This division of labor was not new, since during Brinton's curatorship, pathological work, as distinguished from the collection and preparation of specimens, had been largely assigned to Woodward. Like his associate, Brinton, Woodward was a Philadelphian, born in 1833, and a graduate in medicine at the University of Pennsylvania in 1853. He was a founding member of the Pathological Society of Philadelphia, organized in 1857, and had published several papers dealing with microscopic studies before entering the Army at the outbreak of war. In connection with his duties at the Museum, he had written "The Hospital Steward's Manual," published in 1862, a valuable guide for the work of the forerunners of today's medical corpsmen, and "Outlines of the Chief Camp Diseases of the United States as Observed During the Present War," published in 1863.<sup>25</sup>

### *Pioneering in Microscopy*

It was in the study of "camp fevers and diarrheas" that Dr. Woodward (fig. 13) made the pioneer use in America of the newly discovered aniline dyes in staining tissue, so that certain parts become more visible under the microscope. The idea of staining specimens so as to cause particular features to stand out more clearly was as old as Van Leeuwenhoek himself, but the unstable nature and the limited range of colors of most of the vegetable and animal dyes available had limited the use of the idea until the discovery, by the English youth, William Henry Perkin, of aniline dyes made from coal tar. The new dye industry flourished famously in Germany and it was there, in 1862 and 1863, that the new colors were used to stain specimens for microscopic examination.

On 14 May, Dr. Woodward wrote to Rudolf Virchow, whose theory of the cellular origin of cellular tissues had been announced in 1858, asking if he had "used aniline or any of its derivatives for coloring microscopical specimens." There is no record of a reply from the great German investigator, if indeed he replied to his then virtually unknown American interrogator, but as early as July 1864, Woodward was using "aniline in histological researches," as reported in a paper in the *American Journal of the Medical Sciences*, published in 1865 under the title "On the Use of Aniline in Histological Researches With a Method

<sup>25</sup> (1) Hume, *op. cit.*, pp. 141, 142. (2) Edmonds, Henry W.: Woodward and the Changing Concept of Cancer, 1858-1873. *The Military Surgeon* 109: 314, 315, October 1951.



FIGURE 13.—Lt. Col. Joseph J. Woodward, MC, who pioneered in America in the use of aniline dyes for staining microscope slides and in photomicrography "using the highest powers."

of Investigating the Histology of the Human Intestine and Remarks on Some of the Points To Be Observed in the Study of the Diseased Intestine in Camp Fevers and Diarrheas."

From the title of Dr. Woodward's paper and its opening statement that "the use of these colors for the purpose of staining certain parts of tissues and thus rendering them more visible appears to be unknown in this country and, so far as I can learn from the journals accessible to me, is imperfectly understood abroad," it appears that, working independently in the Army Medical Museum,

young Dr. Woodward had hit upon and developed one of the great basic techniques of the pathologist.<sup>26</sup>

### *Woodward, Curtis, and the Camera*

Another of the indispensable tools of present-day pathology in which Woodward did pioneer work was the photographing of objects visible only under the microscope. In this work, he was assisted by Dr. Edward Curtis (fig. 14), whom Woodward described in his letter to Virchow as a patient and dexterous young man (Woodward himself was 31; Curtis was 5 years younger) with preliminary training as a microscopist, who was capable of independent investigation in pathology.

The work in photomicrography, first undertaken late in 1864 (fig. 15), was described in a report to The Surgeon General, published on 1 November 1865 as Circular No. 6, and again in the second part of the Catalogue of the Microscopical Section of the Museum, published in 1867.<sup>27</sup> In these early experiments with microscopic photography, the source of illumination was the sun itself, ingeniously harnessed "to insure a perfectly steady and at the same time an intense light," according to the account of the process as given in the catalogue.

The room in which the photograph was to be taken, darkened so as to dispense with a light-tight bellows, became the "camera" with a window facing south as the "shutter," through which the direct rays of the sun, caught in the mirror of a heliostat mounted outside the window, were reflected upon the plane mirror of a microscope mounted horizontally just inside the window. From the mirror, the reflected rays of the sun were thrown upon the object to be photographed, placed upon the stage of the microscope, whence the light passed through the barrel of the instrument to the object-glass where it was magnified. The magnified image was brought to a focus upon the sensitive photographic plate, mounted upon a stand which was moved back and forth along a 10-foot track provided with a scale for measurement of distances from the microscope (fig. 16). When photographs were to be made at the higher

<sup>26</sup> (1) Copy of letter, Joseph J. Woodward to Rudolf Virchow, 14 May 1864. On file in historical records of AFIP. (2) Leikind, Morris C.: Aniline Dyes—Their Impact on Biology and Medicine. From the Report of the Smithsonian Institution for 1957, Publication Number 4330, p. 437. (3) Lamb, *op. cit.*, p. 38. (4) American Journal of the Medical Sciences 49: 106-113, New Series, 1865.

<sup>27</sup> (1) Circular No. 6, Surgeon General's Office, War Department, November 1, 1865, p. 148. (2) American Journal of Science and Arts, Second Series, Volume LXII, Whole Number XCII, New Haven, September 1866, pp. 189-195. (3) Catalogue of the Microscopical Section of the United States Army Medical Museum, Washington, 1867.



FIGURE 14.—Maj. Edward Curtis, U.S. Volunteers, who collaborated with Dr. J. J. Woodward in photomicrography.

*Memorandum.*

Microscopic photographs of sections of femur, eyelid, kidney, ileum, colon and skin, made by Assistant Surgeons Thomson and Norris, U. S. A., at Douglas Hospital in the spring of 1864, to demonstrate the value of photomicrography and its possibility, with the compound microscope then issued by the Surgeon General's Office to the general hospitals. The enlargements range from 15 to 250 diameters, and the negatives were made with the various objectives alone, and with eye-pieces, aided by an ordinary camera. The wet colodion process was used.

Note by Assistant Surgeon J. D. Woodward, U.S.A.

The above memorandum was furnished by Dr. J. M. Thomson. The microscope issued by the Surgeon General's Office, to which reference is made, was a Zentmeyer small stand with an  $\frac{8}{9}$ " and uncorrected  $\frac{1}{5}$ " by the same maker.

A

FIGURE 15.—Photomicrography spreads. A. The idea of photomicrography had spread from the Medical Museum to the general hospitals, as shown by this memorandum of its use in the Douglas Hospital in Washington.

powers of magnification, or those requiring extended exposure, the beam of light was passed through a pane of greased ground glass giving a diffused "white cloud" effect or, where necessary, through an achromatic condenser placed below the stage. Photographs were made with violet light, separated from the mean white light of the sun by passing the beam through a blue ammonio-copper solution, which also aided the operator by absorbing the heat

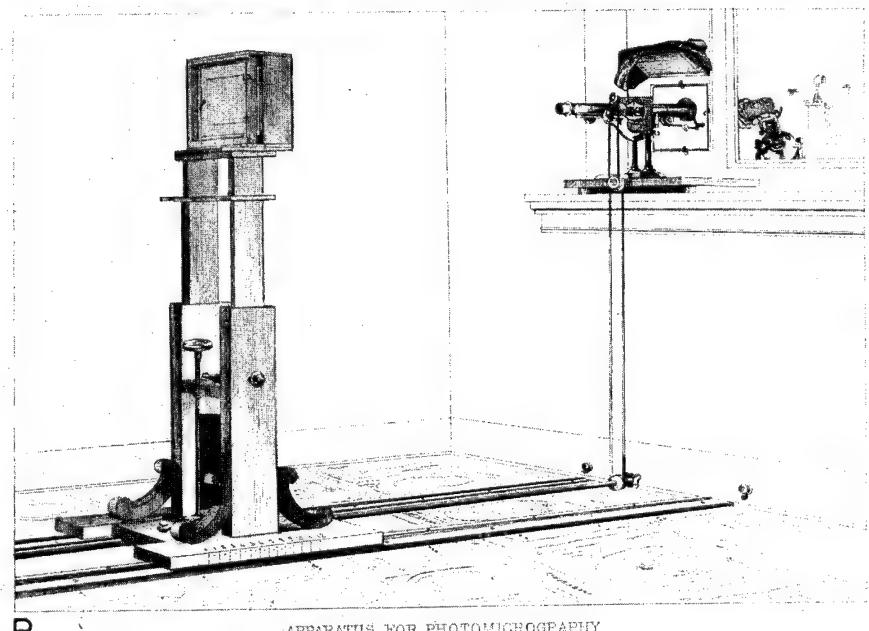
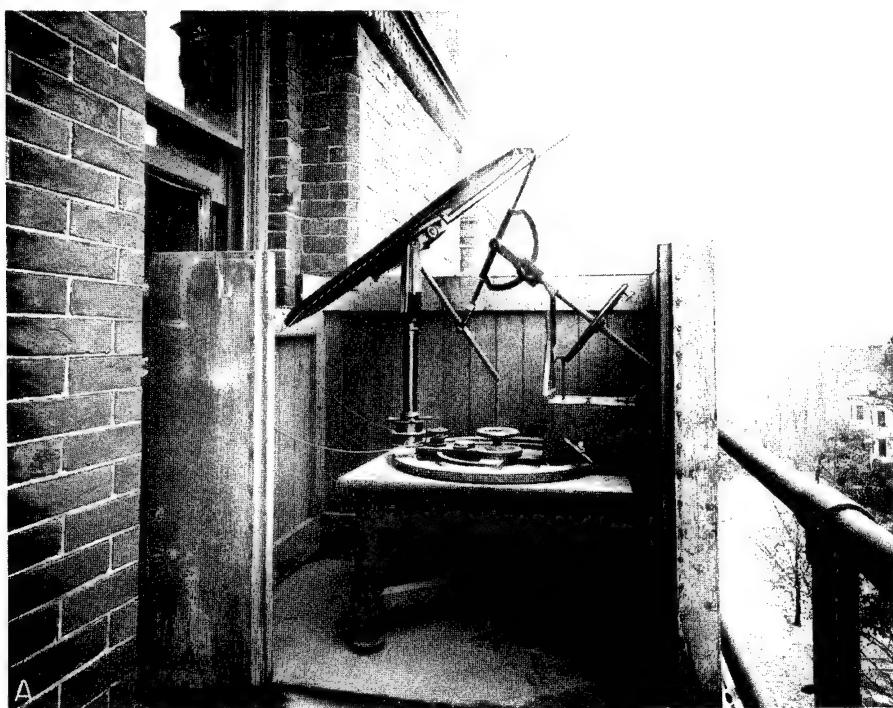


B

FIGURE 15.—Continued. B. The microscope shown is one of those issued by the Surgeon General's Office.

rays of the solar beam. Pictures were "snapped" by opening an aperture in the light-tight shield with which the window was fitted.

The apparatus with which Surgeon Woodward and Assistant Surgeon Curtis worked was, to a large extent, of their own devising. At that time, all plates used in photography had to be sensitized, exposed, and developed while wet with chemicals mixed and applied at the time and place where the picture was to be taken. Projection printing had not been perfected, so that it was still necessary to expose the bulky wet plates in the size desired for the final print. With all these complications in photography, experience showed that better pictures were obtained by the employment of a "practical photographer \* \* \* to manage the dark room" while the microscopist focused his "whole attention to the optical arrangements." Despite difficulties and complications, the pioneer photomicrographers made pictures which suffer not at all in comparison with those made today.



APPARATUS FOR PHOTOMICROGRAPHY

FIGURE 16.—Pioneer photomicrography. A. By sunlight. B. The microscope is wedded to the camera.

Despite the frustrating delays of overcast weather and the vagaries of passing clouds even on sunny days and determined to make the "process wholly independent of the weather," experiments were undertaken in 1869, using electric lights and magnesium lamps (fig. 17), such as were used for "magic lantern" lectures. Both proved successful, but the electric light was superior. In fact, Woodward reported to The Surgeon General on 5 January 1870, that an electric lamp, powered by a 50-unit battery, gave better results with less trouble than sunlight, and claimed for the Museum and for himself the credit of having demonstrated the serviceability of artificial lighting as a source of illumination for making negatives of high powers. The use of artificial lighting made it possible, as Dr. Woodward reported in 1870, "to sit down quietly of an evening, and during 4 hours of work to produce from 12 to 30 negatives, or more"—a casual reference to the working habits which, along with his zeal and enthusiasm, accounted for his prodigious output. But even before his successful demonstration of the use of artificial light, Dr. Woodward, assisted by Dr. Curtis, made negatives which were clear and well defined at the magnification of 2,344 diameters, and which retained their clarity and definition even when enlarged photographically to 19,050 diameters (fig. 18).<sup>28</sup>

Making photomicrographs, however, was but one facet of the work carried on by Lieutenant Colonel Woodward and Major Curtis. There was always the work on the massive medical volumes of the Medical and Surgical History and on the voluminous and growing materials of the Record and Pension Division, which had been committed to Woodward's care.

### *The Museum and the Lincoln Tragedy*

The most melancholy mission assigned to Doctors Woodward and Curtis was that of doing the autopsy upon the body of President Lincoln, who died at 7:20 a.m., 15 April 1865. The pathologists were summoned to the White House at 11 a.m. to perform the grievous task of finding and removing the bullet fired into Mr. Lincoln's head by the assassin, John Wilkes Booth. Woodward's laconic technical report, addressed to The Surgeon General, gives no hint of the emotional tension under which he must have labored. After describing the bloodshot condition of the eyes and lids, and the condition of the wound and surrounding tissue, swollen with blood, he traces the course of the bullet, which entered through the occipital bone about an inch to the left of

<sup>28</sup> (1) Woodward, J. J.: Report to the Surgeon General . . . . on the Magnesium and Electric Lights as applied to Photo-Micrography, Washington, January 5, 1870. (2) Lamb, *op. cit.*, p. 27.

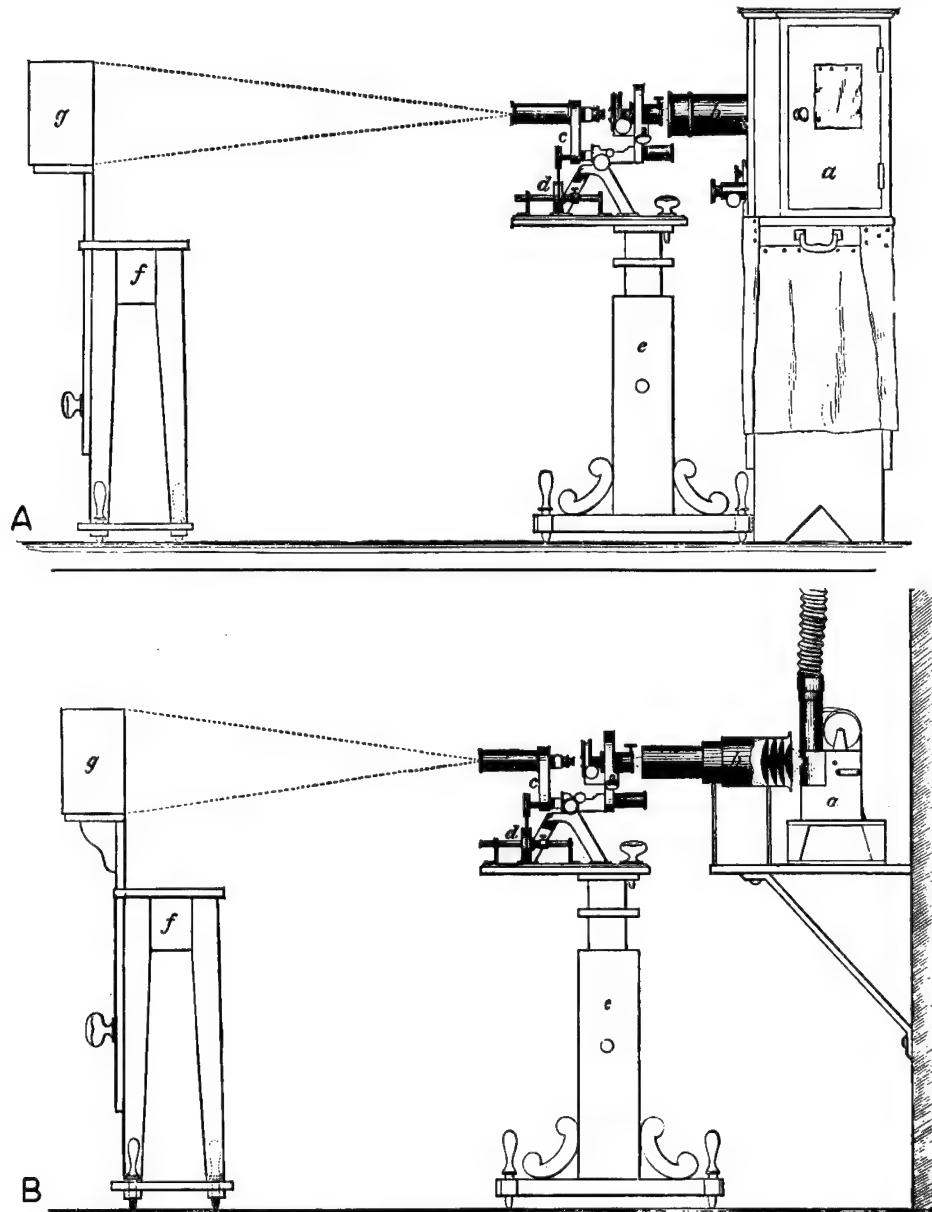
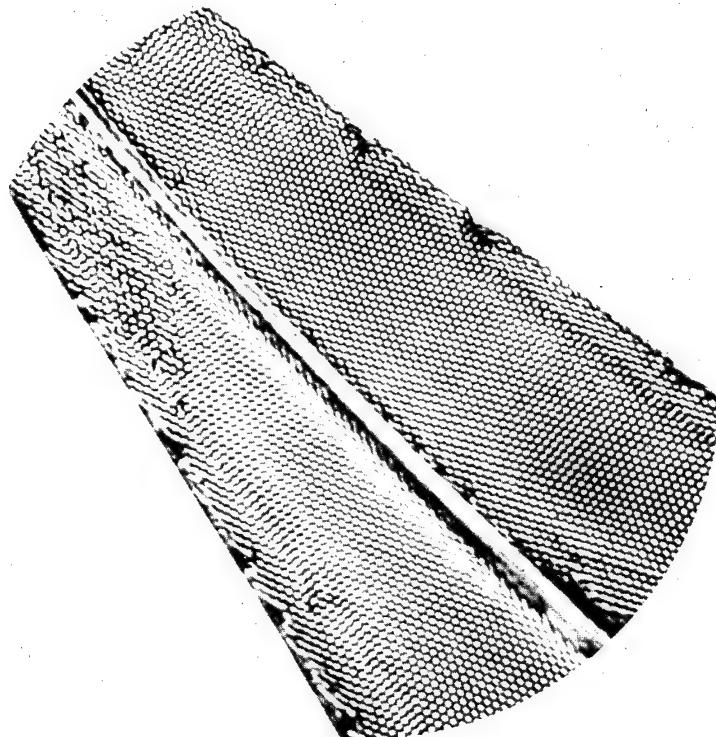


FIGURE 17.—Photomicrography by artificial light. A. Using the electric light. B. Using the magnesium light.

the median line, and just above the left lateral sinus, which it opened. It then penetrated the dura mater (the outer sheath covering the brain), passed through the left posterior lobe of the cerebrum, entered the left lateral ventricle,



WAR DEPARTMENT,  
Surgeon General's Office, Army Medical Museum.

**PLEUROSIGMA ANGULATUM.**

Magnified 2540 diameters. Objective used, 10th inch and amplifier (Watson).  
(Negative No. 67. Microscopical Series.)

Photographed by Brevet Major EDWARD CURTIS, Asst. Surg., U. S. A.

By ORDER OF THE SURGEON GENERAL:

J. J. WOODWARD,  
Bvt. Lt. Col. and Asst. Surg., U. S. A.

FIGURE 18.—A diatom, a form of unicellular life of microscopic size, is magnified by 2,540 diameters.

and lodged in the white matter of the cerebrum just above the anterior portion of the left corpus striatum where it was found. The ventricles of the brain were full of clotted blood. A thick clot beneath the dura mater coated the right cerebral lobe. There was a smaller clot under the dura mater of the left side.

But little blood was found at the base of the brain. Both orbital plates of the frontal bone were fractured, and the fragments pushed up toward the brain. The dura mater over these fractures was uninjured. The orbits were gorged with blood.<sup>29</sup>

A more colorful and emotion-packed account has been left by Dr. Curtis, who wrote:

Eleven o'clock comes; the two designated pathologists are ushered into what was the bedchamber of the deceased, a room furnished in simplest style. There sit in solemn silence some officers in uniform and some civilians, while the Surgeon General paces nervously to and fro beside another silent occupant of the chamber, a shrouded figure, cold and motionless, lying outstretched upon two boards laid across trestles \* \* \*.

The shroud is laid back, and see! A smooth clear skin fitting cleanly over well-rounded muscles, sinewy and strong \* \* \*. Next see at the back of the head, low down and a little to the left, a small round blackened wound, such as is made by a pistol-shot at close range. There is no counter-opening, so the missile has lodged and must now be found \* \* \*. The part is lifted from its seat, when suddenly, from out a cruel vent that traverses it from end to end, through these very fingers there slips a something hard—that slips and falls with a metal's mocking clatter into a basin set beneath. The search is satisfied; a little pellet of lead.

So impressed was Dr. Curtis with the historical interest attached to the autopsy on the martyred President, that when he found some drops of the blood of the President upon his cuffs, Mrs. Curtis cut them off and saved them. Ultimately, they were presented to the Medical Museum where they may be seen today, along with a tiny sliver of bone which evidently had been driven into Mr. Lincoln's brain by the bullet and had adhered to the surgical instrument used by Dr. Curtis (fig. 19).<sup>30</sup>

Another connection between the Museum and the events surrounding the death of President Lincoln was the preparation by Hermann Faber (fig. 20),

<sup>29</sup> (1) This account is taken from a true copy of the original, certified by Maj. George A. Otis, in the collection of the Medical Museum. In Gilmore, Col. Hugh R., Jr.: Medical Aspects of the Assassination of Abraham Lincoln. Proceedings of the Royal Society of Medicine, London, 47: 103-108, February 1954. It is Dr. Gilmore's opinion that "it is doubtful if modern medical practice could have saved Lincoln's life." (2) In a lecture at Walter Reed Army Medical Center on 25 May 1960 (reported in the *Washington Post* of 25 May), Lt. Col. George J. Hayes, M.C., Chief of Neurological Service, said that even with the best of modern medical service, the President would have had no more than a 50-50 chance of survival, and even if he had survived, he would probably have been completely paralyzed on the right side and possibly unable to talk.

<sup>30</sup> (1) Personal Recollections of the War of the Rebellion: addresses delivered before the Commandery of the State of New York Military Order of the Loyal Legion of the United States, Fourth Series, A. Noel Blakeman (editor), New York, 1912, includes "Last Professional Service of the War," pp. 54-65, read on 7 October 1908 by Companion Edward Curtis, Brevet Major, Late U.S.A. (2) From the bloodstains on the cuffs preserved by Mrs. Curtis, Col. Joseph H. Akeroyd, MSC, U.S. Army (now stationed at Brooke General Hospital) was able to type President Lincoln's blood as Type A.

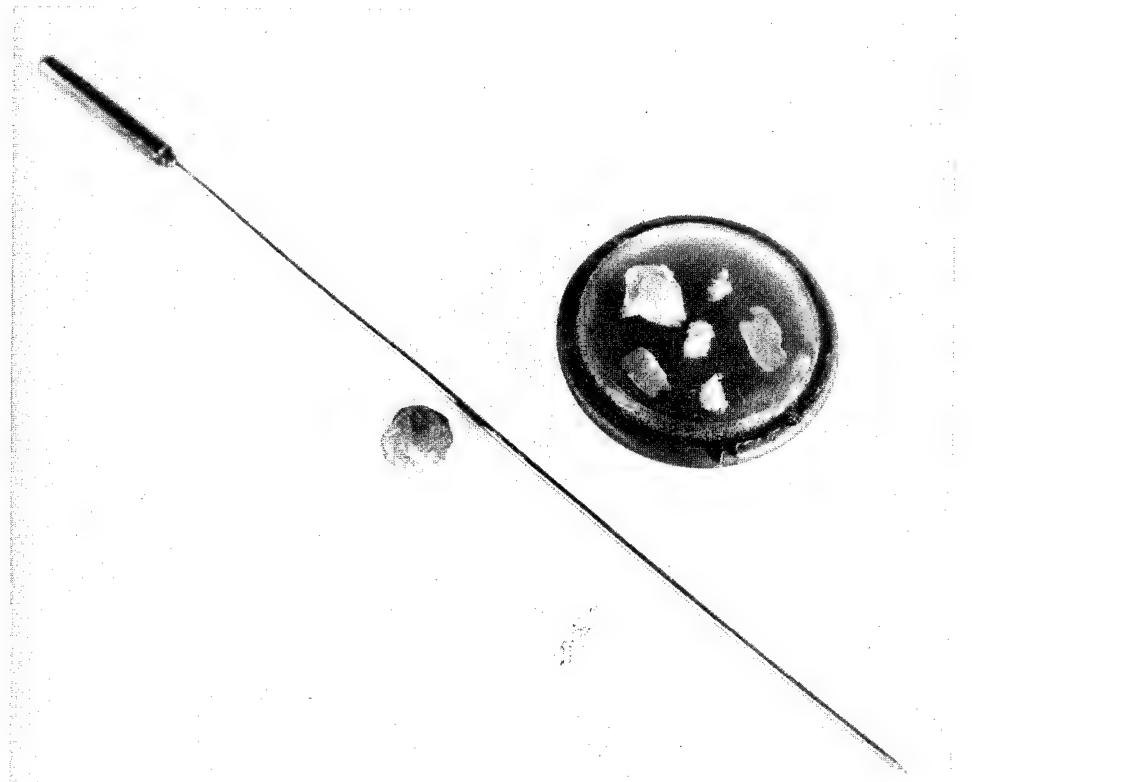


FIGURE 19.—The bullet that ended President Lincoln's life, the instrument used to locate it, and bone fragments which adhered to it.

medical artist at the Museum, of the earliest and most accurate sketch of the scene at the deathbed of the President. Mr. Faber, a German artist enlisted as a hospital steward and assigned to the work of what would now be called medical illustration, entered the Petersen house, in which Mr. Lincoln had died, immediately after the removal of the body. Nothing had been disturbed, and the sketch made was approved for accuracy by Surgeon General Barnes, who had been one of the physicians attending the President and who was present at his death. The original of the sketch is among the exhibits at the Medical Museum (fig. 21).<sup>31</sup>

<sup>31</sup> (1) Purtle, Helen R.: Lincoln Memorabilia in the Medical Museum of the Armed Forces Institute of Pathology. *Bulletin of the History of Medicine* 32: 68-74, January-February 1958. Miss Purtle's article discusses interestingly the various Lincoln items in the Museum, and gives an account of the acquisition of each one, which was mostly by gift. (2) Original sketch was presented on 30 January 1933, by Erwin F. Faber, son of Hermann Faber, to the Army Medical Museum. Letter on file in historical records of AFIP.



FIGURE 20.—Hermann Faber, whose sketch of the Lincoln deathbed scene gives some idea of the throng in attendance.

The pictorial resources of the Museum were also called upon in the search for the President's assassin and his accomplices. "During the month of April," says a report of 1 July 1865 from Dr. Otis to The Surgeon General, "there were printed 1,500 photographs of the assassins of the President, for the assistance of the officers of justice."<sup>32</sup> Presumably, these photographic prints were used to illustrate the reward posters of the War Department, dated 20 April 1865. This

<sup>32</sup> Lamb, *op. cit.*, p. 35.



FIGURE 21.—This sketch, made by Hermann Faber immediately after the removal of President Lincoln's body from the Petersen house in which he died, was approved for accuracy by Surgeon General Barnes.

poster is illustrated with a familiar pose of Booth, but the picture of David E. Herold is that of a schoolboy, while the one supposed to represent John H. Surratt is of some other individual entirely. Later, after the conspirators had been captured, tried, and executed, the War Department revised the photographic part of the poster, changing the Booth picture to another pose, the picture of Herold to one made after his capture, and the Surratt picture to one of Surratt made after his capture and return to the United States.<sup>33</sup> The poster exhibited at the Medical Museum is one of the revised edition (fig. 22).

Still another contact of the Museum with the Lincoln tragedy was the examination of the cervical vertebrae and section of the spinal cord of the assassin, John Wilkes Booth. These specimens were removed from the body officially identified as that of Booth after it was brought to Washington on 29 April 1865, and show the course of a conoidal bullet through the third, fourth,

<sup>33</sup> Roscoe, Theodore: *The Web of Conspiracy*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1959, pp. 334, 335.



FIGURE 22.—Reward poster, revised.

and fifth cervical vertebrae and the perforated spinal cord, all of which are now on exhibition in the Museum.<sup>34</sup>

With the surrender at Appomattox and the collapse of the Confederacy, the war which had been responsible for the birth and growth of the Museum was approaching an end. Soon the grand armies of the Union would march in review up Pennsylvania Avenue and would disband to their homes. Many of the war-born institutions would come to a close—but not the Army Medical Museum. It would continue its mission of showing, by specimens, preparations, and illustrations, the nature and form of disease and injury, and teaching ways and procedures to alleviate suffering and lessen mortality according to the medical lights of the time.

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<sup>34</sup> (1) Purtle, *op. cit.*, p. 74. (2) Medical and Surgical History of the War of the Rebellion. Surgical History. Washington: Government Printing Office, 1870, pt. I, vol. II, p. 453.

## CHAPTER III

# Second Wind

Fortunately for the future, while most other elements in the great complex of military organizations which had just won the war were shrinking back toward pre-war standards of size and activity, the Medical Museum was permitted to go on its way undisturbed. It had won the respect of the new Surgeon General, Joseph K. Barnes (fig. 23), who declared in the Annual Report for 1864, while the war was still being fought, that "the Army Medical Museum continues to increase in value, and is already one of the most instructive pathological collections in the world." Thus, early in its history, the ultimate direction of the development of the Museum was foreshadowed by the use of the word "pathological" to describe its collections. The term was repeated in The Surgeon General's Report for 1865, with mention of the Museum's "pathological collection," which had grown to 7,630 specimens.

Continued support of the project by Surgeon General Barnes was further evidenced by Circular No. 6 of the Surgeon General's Office, issued on 26 June 1865, directing that "when Hospitals shall be discontinued and their Libraries disposed of, the most valuable works, Scientific, Historical, etc., shall be carefully selected, packed and turned over to the Quartermaster's Department for transportation to Surgeon George A. Otis, U.S.V., Curator of the Army Medical Museum."

### *Supply and Funding for the Museum*

Besides books, The Surgeon General interested himself in supplementing the financial support of the Museum by securing from the War Department the authority to have all "slush funds" of discontinued hospitals turned over to Major Otis for the use of the Museum. Just how much these funds amounted to does not appear, but the transfer, ordered on 27 September 1865, did not escape the attention of the Comptroller of the War Department, to whom General Barnes addressed an explanation and an inquiry on 21 July 1866. "This Fund," The Surgeon General wrote, "accrued during the war at the various General Hospitals from the sale of soap, fat and swill, and upon their discon-



FIGURE 23.—Maj. Gen. Joseph K. Barnes, The Surgeon General of the Army for 18 years, 1864-1882, who carried forward much of the program initiated by General Hammond.

tinuance, was transferred to Dr. Otis by authority of the Honorable Secretary of War, to be expended for the use of 'the Army Medical Museum.' As this fund resulted from the sale of refuse subsistence supplies, it is believed to be embraced in the exceptions to the Act of 1849, which are stated in the Act of 1850." Under the circumstances, The Surgeon General asked, were not the "slush funds" exempt from the requirements of the Act of 1849 that "all moneys received from the customs, and all other sources, are to be paid into the Treasury without abatement or reduction"? <sup>1</sup>

Expenditures from the Museum fund, whether augmented by the "slush funds" or not, were extremely modest. As reported by Curator Otis to The Surgeon General on 1 July 1865, "\* \* \* about two-fifths of the annual appropriation" of \$5,000 had been paid for new cabinets to contain the specimens and \$1,200 had been spent for "apparatus of a high order of excellence" for the "commodious photograph gallery erected in the yard of the Museum by the Quartermaster's department, and supplied with water, baths, screens, shelving, etc."

### *Increasing Activities of the Museum*

Over 50 of the more interesting specimens in the Museum had been photographed, and 40 complete sets of this series of pictures, each accompanied by a history, had been prepared for issue to medical directors of armies and departments. This project had involved the making of more than 1,000 photographic prints, this being before the day of the halftone process of reproduction. In addition, 150 photographs were made to guide the wood engravers in making a like number of woodcuts for use in illustrating catalogs or other publications relating to the surgery of the war.

Additional apparatus for Surgeon Joseph J. Woodward's microscopical work had been purchased, and "for several months" Assistant Surgeon Edward Curtis had been engaged in experiments in photomicrography, with results already attained that had been favorably received. In the surgical department, 997 additional specimens had been mounted and cataloged since 3 October 1864, while the medical side of the Museum had "very complete" illustrative materials on the principal camp diseases, with many valuable additions on parasitic diseases and morbid processes in general.

<sup>1</sup> (1) Lamb, Dr. D. S.: A History of the Army Medical Museum, 1862-1917, compiled from the Official Records. Mimeographed copy in historical records of AFIP, pp. 34, 37. (2) On file, National Archives, Accession Number 421, Letter Book Number 42, SGO, p. 347.

Enough glass jars were on hand to meet the Museum's needs for a year to come, and a sufficient quantity of alcohol had been distilled from confiscated whisky turned over to the Museum by the major general commanding in Washington to mount the wet preparations suitably.<sup>2</sup>

The Museum, according to Dr. Otis's report, had not only enough glass jars and alcohol; it had also an appropriation for the coming year that was "ample." The fact that an annual appropriation of \$5,000 was "ample" was explained later by Dr. Woodward in an article in *Lippincott's Magazine* for March 1871. "The building is already the property of the government, the officers and attachés all belong to the army; no extra-duty pay, no special allowances of any kind are awarded to any of them." Hence, as Dr. Woodward put it, "the total additional outlay \* \* \* in consequence of the existence of the museum is so small that it may fairly be regarded as insignificant in comparison with the good to be obtained."<sup>3</sup>

### *The Museum's Fourth Home*

In its 3 years of life, the Museum had been housed in three different buildings and now, in its fourth year, it was to be moved again. Its new quarters were in the building (fig. 24) formerly occupied by Ford's Theater, on 10th Street, NW., where, on Good Friday of 1865, President Lincoln was shot. The building had been closed as a theater immediately after the assassination and had been in the possession of the Government since 8 July 1865. The purchase of the building "for the deposit and safekeeping of documentary papers relative to the soldiers of the army of the United States and of the Museum of the Medical and Surgical Department of the Army" was provided for by Act of Congress approved 6 April 1866, and on 7 May 1866, the building was assigned by Secretary of War Edwin M. Stanton to The Surgeon General.<sup>4</sup>

Its interior fittings had been torn out and replaced with three floors, of which the upper floor was assigned to the Museum, the second floor to the surgical records of the Surgeon General's Office, and the ground floor to the Record and Pension Division of the same office. There had been an effort to fireproof the building by putting in brick floors resting on iron arches, sup-

<sup>2</sup> (1) Lamb, *op. cit.*, pp. 35, 37. (2) Lamb, D. S.: Army Medical Museum, Washington, D.C. *The Military Surgeon* 53: 109-111, August 1923.

<sup>3</sup> Woodward, J. J.: The Army Medical Museum at Washington. *Lippincott's Magazine*, Philadelphia, VII: 241, March 1871.

<sup>4</sup> (1) Statement of Gen. Joseph K. Barnes. On file, National Archives, War Department Records, Letter Book No. 14, SGO, 1878, p. 15. (2) U.S. Statutes at Large, volume 14, p. 23.



FIGURE 24.—The fourth home of the Museum.

ported by columns of iron. Stairways between floors were also of iron. The building had a front of 71 feet on 10th Street, and a depth of 109 feet. Museum workshops and a chemical laboratory were housed in small wings on each side.

Into this building, "the scene of the assassination of the lamented Lincoln," in the words of Dr. Woodward, the collections of the Museum were to be moved. "What nobler monument could the nation erect to his memory," the doctor asked, "than this sombre treasure house, devoted to the study of disease and injury, mutilation and death?"<sup>5</sup>

The movement of this "sombre treasure" from the building on H Street began on 12 November 1866, and continued until 8 December. The removal of the records, and that portion of the collection which had been housed at 180 Pennsylvania Avenue, followed between 11 December and the 21st of the month. On the 22d, General Barnes advised the Quartermaster General's

<sup>5</sup> Woodward, *Lippincott's Magazine*, VII (1871), pp. 233, 242.

office that the former quarters had been vacated, and transmitted the keys.<sup>6</sup> For the next 20 years, the life of the Museum was to be centered in the Ford's Theater building.

From the beginning, the Museum had attracted an increasing number of visitors. Within a year of its establishment, its usefulness had been recognized by the civilian medical profession as well as by the military, and it was "weekly and almost daily" consulted by them.<sup>7</sup> To the medical profession, there was added another class of visitors with a special interest. In Dr. John H. Brinton's phrase, "officers and soldiers who had lost a limb by amputation would come to look up its resting place, in some sense its last resting place." Then, too, as Dr. Brinton wrote, "the public came to see the bones, attracted by a new sensation." While the Museum was still at the H Street address, Curator Otis reported, more formally, "the number of visitors to the collection constantly increases."<sup>8</sup>

With the removal to the Ford's Theater building, and its tragic associations with the great appealing figure of Lincoln, the number of visitors mounted to such an extent that rules, approved by order of The Surgeon General and issued on 25 April 1867, were posted (fig. 25).<sup>9</sup>

Between mid-April of 1867 and the end of the year, some 6,000 persons, an average of about 25 for each day the Museum was open, had been registered in the visitor's book. Within the next 4 years, the number of visitors had trebled,<sup>10</sup> and the Museum had become established as one of the "sights" of Washington. When extra crowds came to the city, as upon the occasion of Lt. Gen. Ulysses S. Grant's inauguration as President in 1869, the visiting hours were extended—opening at 9 a.m. and closing at 4 p.m.; and at his second inauguration, in 1873, from 8 a.m. until 4 p.m.<sup>11</sup>

The collections viewed by these visitors were divided into six groups or sections—surgical, medical, microscopical, normal human anatomy, comparative or animal anatomy, and miscellaneous articles (fig. 26).

<sup>6</sup> (1) Lamb, *op. cit.*, p. 41. (2) Lamb, *The Military Surgeon*, 53 (1923), pp. 112, 113. (3) National Archives, Accession Number 421, Letter Book Number 13, Military, p. 452.

<sup>7</sup> Original letter, John Hill Brinton to Joseph K. Barnes, 24 August 1863. On file in historical records of AFIP.

<sup>8</sup> (1) Brinton, John Hill: Personal Memoirs. New York: The Neale Publishing Co., 1914, p. 189.  
(2) Lamb, *op. cit.*, pp. 35-37. (3) Lamb, *The Military Surgeon*, 53 (1923), p. 110.

<sup>9</sup> War Department Records, Office of the Surgeon General. On file in National Archives.

<sup>10</sup> (1) Lamb, *op. cit.*, p. 44. (2) Woodward, *Lippincott's Magazine*, VII (1871), p. 239.

<sup>11</sup> Original letters, George A. Otis to Charles H. Crane, 2 March 1869 and 28 February 1873. On file in historical records of AFIP.

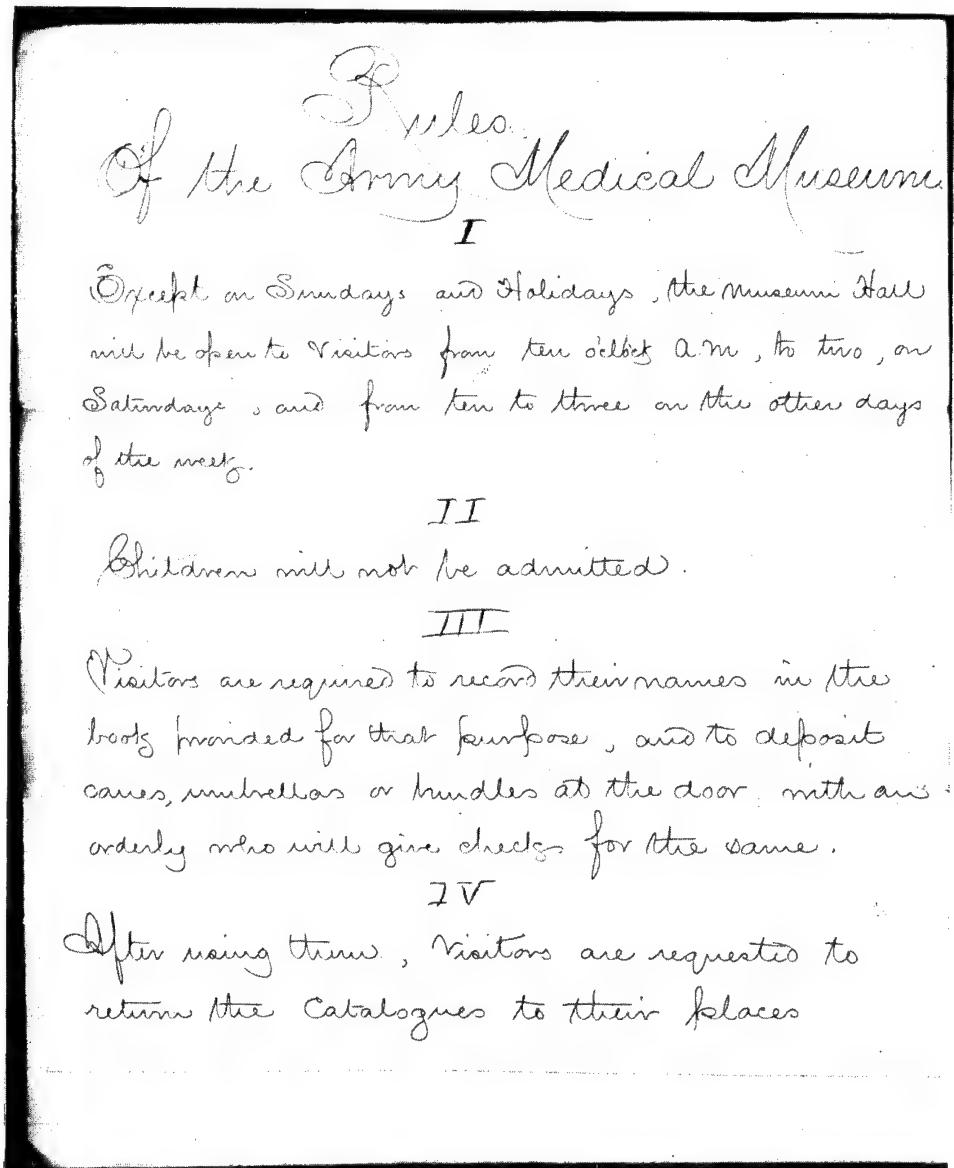


FIGURE 25.—The Museum adopts visiting rules.

In addition, there was the beginning of a collection of crania, chiefly of American Indians, together with specimens of Indian weapons, dress, implements, diet, and medicines, started in response to Circular No. 2 of the Surgeon's General's Office, issued on 4 April 1867. The chief purpose of the collection, officers of the Medical Department were informed by Assistant Surgeon General

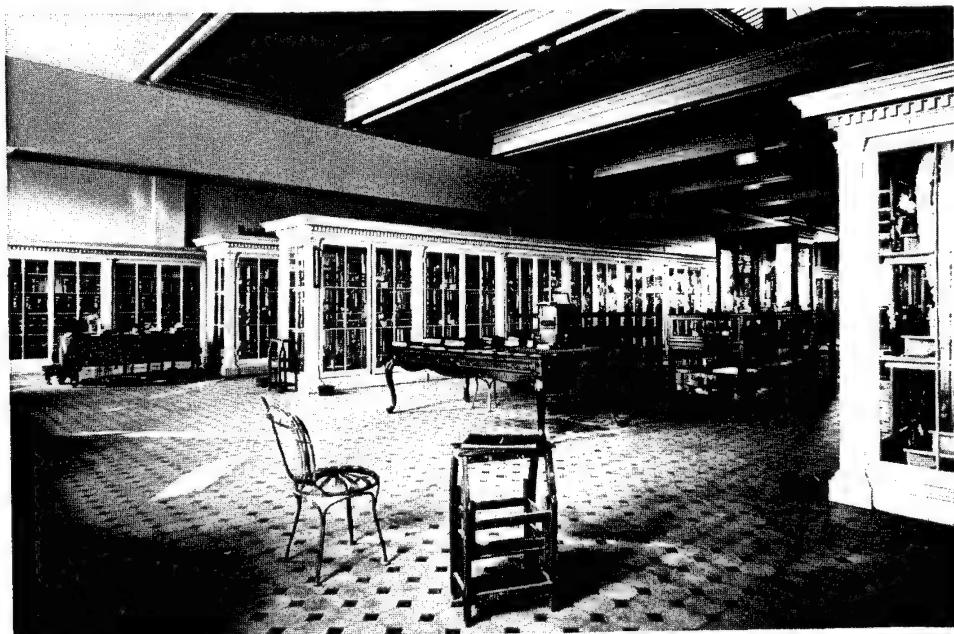
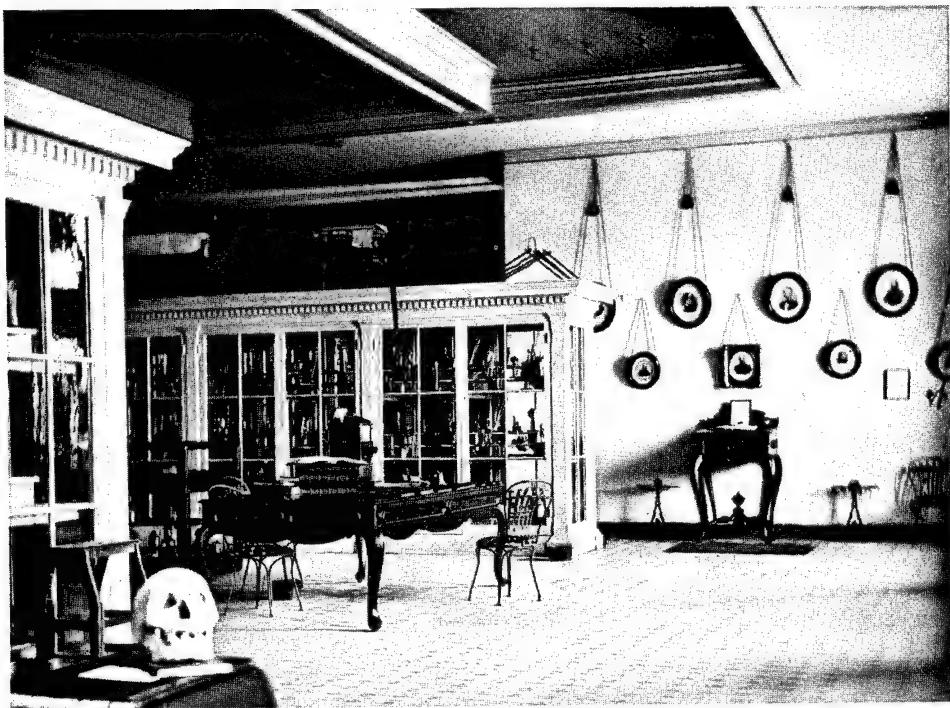


FIGURE 26.—Main exhibit hall of the Museum, Ford's Theater building, 1866-1887.

Charles H. Crane in a memorandum of September 1868, was "to aid the progress of anthropological science by obtaining measurements of a large number of skulls of the aboriginal races of North America." For that purpose, it was necessary "to procure sufficiently large series of adult crania of the principal Indian tribes to furnish accurate average measurements."<sup>12</sup>

The articles relating to Indian archeology and anthropology, received along with the skulls and skeletons, belonged more appropriately in the Museum of Natural History, administered by the Smithsonian Institution. Professor Joseph Henry, Secretary of the Smithsonian, accordingly proposed to Surgeon General Barnes an exchange of the Smithsonian's anatomical materials for the Medical Museum's materials relating to the manners and customs and the archeology of the Indian tribes. The Surgeon General agreed, and over the next several years numerous exchanges were effected.

The craniological collection was to have been the most important feature of a proposed catalog of the anatomical section of the Museum, to accompany the catalogs of the surgical, medical, and microscopical sections. In a letter of 18 January 1873, to the Honorable John Coburn, chairman of the House Committee on Military Affairs, Surgeon General Barnes strongly urged such a catalog as "simply a necessity" to make the collections accessible to students. "Anthropologists in different parts of the world," he wrote, "are anxious for the data \* \* \* for comparison with similar data published in Sweden, Russia, Germany, Italy, France, and England. The French Government, through its Legation here, after making repeated applications for the tables of cranial measurements, employed an artist to make casts and take photographs of a series of typical skulls; and a professor of Bonn made the study of the collection the object of a trip across the Atlantic."

The Military Affairs Committee reported favorably on the bill authorizing the publication of the catalog at a cost for 1,000 copies estimated at \$26,200, but the bill was not passed and the catalog was not published.<sup>13</sup>

After some 30 years of medically unfruitful measurement of the cubic capacity, the length and breadth, the facial angle, and other characteristics of skulls, it was decided that such determinations pertained more properly to anthropology than to medical study. On 8 May 1898, therefore, the Museum's

<sup>12</sup> (1) War Department Records, Office of the Surgeon General. On file in National Archives. (2) Lamb, *op. cit.*, pp. 43, 50, 51. (3) Lamb, *The Military Surgeon*, 53 (1923), pp. 117, 118.

<sup>13</sup> House of Representatives Report 56 (42d Congress, 3d session), 4 February 1873, "The Army Medical Museum."

collection of crania, by then numbering 2,206 specimens, was transferred to the Museum of Natural History.<sup>14</sup>

Exchanges of duplicate and supernumerary specimens with other institutions and individuals, and purchase of private collections increased the holdings of the Museum. Among the former was the exchange of pictures and models, suitable for class demonstration, which had been prepared for use in the projected Army Medical School, vetoed by Secretary Stanton, for a cabinet of pathological specimens collected by professors of the National Medical College of Washington, which had taken over the buildings on H Street vacated by the Museum and which, under its present name of the School of Medicine of George Washington University, still occupies the site. Among the latter was the purchase at Richmond, Va., on 22 April 1868, from the widow of Prof. William Gibson, University of Pennsylvania, of a collection of 413 specimens, 54 casts and wax models of human anatomy, and 42 oil paintings by Sully of various diseased conditions.<sup>15</sup>

Still another source of specimens for the Museum's collection was the medical staff of the Bureau of Refugees, Freedmen, and Abandoned Lands, better known as the Freedmen's Bureau. Col. L. A. Edwards, chief medical officer of the Bureau, appealed on 6 June 1868 to "all Acting Assistant-Surgeons in the employment of the Bureau, and especially those who are in charge of Freedmen's Hospitals, [to] avail of every opportunity of contributing to the Anatomical and Pathological collections of the Army Medical Museum." Officers were especially urged to make, or have made, autopsies and to forward to the Museum "all pathological specimens of interest thus obtained."<sup>16</sup>

### *Praise From Foreign Visitors*

By 1871, when Dr. Woodward's description of the Museum was published in *Lippincott's Magazine*, the surgical section consisted of about 6,000 mounted specimens and 350 plaster casts, the medical section of 1,150 specimens, and the microscopical section of more than 4,000. The anatomical section included nearly 1,000 human skulls and skeletons, of which 376 had been transferred by the Smithsonian in exchange for Indian weapons, utensils, and other artifacts, while a still larger number had been contributed by medical officers.<sup>17</sup> The section of comparative anatomy (fig. 27) included more than 1,000 animal

<sup>14</sup> (1) Lamb, *op. cit.*, pp. 52-54, 56, 57, 75, 76, 81, 89, 91, 97, 108, 114. (2) Lamb, *The Military Surgeon*, 53 (1923), pp. 118, 119.

<sup>15</sup> (1) Lamb, *op. cit.*, pp. 48, 49, 56. (2) Lamb, *The Military Surgeon*, 53 (1923), pp. 116, 117.

<sup>16</sup> War Department Records, Office of the Surgeon General. On file in National Archives.

<sup>17</sup> (1) Woodward, *Lippincott's Magazine*, VII (1871), pp. 235-238. (2) Lamb, *op. cit.*, p. 56.

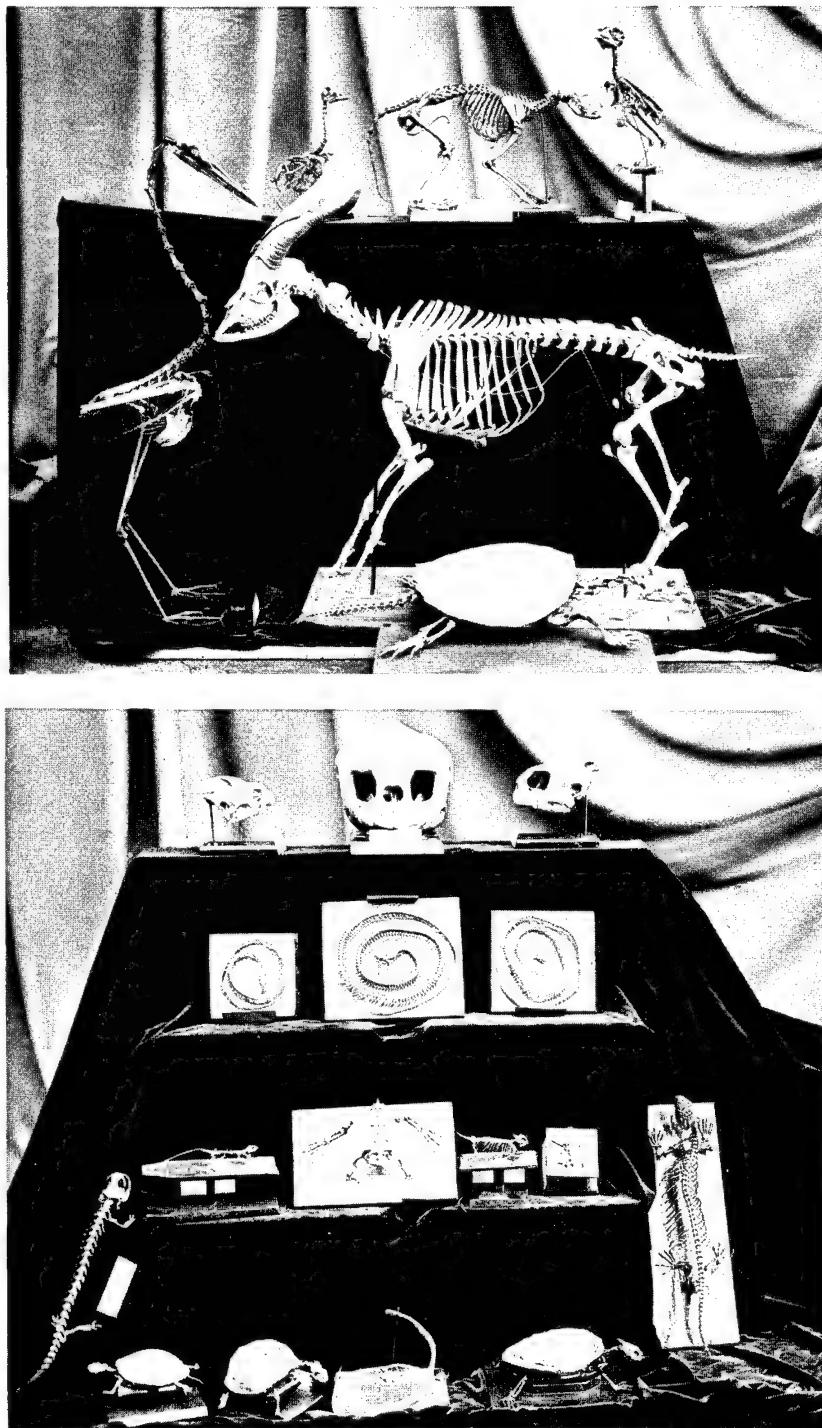


FIGURE 27.—Early "dry" exhibits in comparative anatomy at the Medical Museum included skeletal remains of a variety of mammals, birds, and reptiles.

skulls and skeletons, with special attention paid to the anatomy of the horse.

The majority of the 6,000 surgical specimens were, as was to be expected, illustrative of military surgery, though other surgical cases were already well represented. Over 400 missiles extracted from wounds were included, while sabers and other cutting weapons were responsible for 22 specimens.

"Altogether," wrote Dr. Woodward, "it may safely be asserted that in the illustration of military surgery this section not only exceeds any other surgical museum in the United States, but surpasses any similar collection hitherto made in the Old World—a fact that has been frequently and willingly admitted by foreign savants well acquainted with the subject who have visited Washington."<sup>18</sup>

Dr. Woodward doubtless referred to statements by Dr. Berenger-Feraud of Paris, published in the *Gazette des hôpitaux civils et militaires*, Paris, and Saint George Mivart, published in *Nature*, London, in 1870. In the Paris publication, Dr. Berenger-Feraud said that the United States had done as much in the building of an anatomicopathological museum in 5 years as had been done in Europe in a century, and that the three catalogs which had been published—surgical, medical, and microscopical—contained more specimens than were in all the like museums in Europe combined. In recognition of the fact that the materials in the Museum had been chiefly collected during the American Civil War, Mr. Mivart said in the London publication that "the Americans are a wonderful people. There are few other nations which would have been capable of so utilizing the results of a protracted internece war as to make them available in after years toward the advancement of medical science and alleviation of human pain."<sup>19</sup>

Some foreign visitors, according to Dr. Woodward, were not only impressed by the scope of the collections of the Museum, but "seem to have been particularly struck with the free access given to the general public and to private soldiers, who in less enlightened communities would be excluded from such an institution."

While the majority of the 1,150 specimens in the medical section of the Museum illustrated "morbid conditions of the internal organs in fever, chronic dysentery and other camp diseases," Dr. Woodward reported, "the number of preparations which exhibit the morbid anatomy of the diseases of civil life" had been constantly increasing since the war. These included "pathological

<sup>18</sup> Woodward, *Lippincott's Magazine*, VII (1871), p. 236.

<sup>19</sup> (1) *Gazette des hôpitaux civils et militaires*, Paris, XLIII: 293, and *Nature*, London, 11 August 1870, p. 290 (as cited by Lamb, *op. cit.*, pp. 57, 58). (2) Lamb, *The Military Surgeon*, 53 (1923), p. 120.

pieces" relating to the diseases of women and children—which, after all, were not foreign to the practice of medicine by army doctors responsible for the health of dependents as well as for that of military personnel.

### *The Museum and the Medical Profession*

Many of the post-war contributions to the Museum were from physicians and surgeons in civil life who, as the institution became better known after the war, gave specimens developed in their practice—the beginning of the close relationship between the Museum and its successor, the Institute, and the medical profession, the results of which have been so fruitful.<sup>20</sup>

Among the more interesting of the early contributors to the collections were former Confederate surgeons, including three presidents of the American Medical Association, Dr. Henry F. Campbell of Augusta, Ga., Dr. Paul F. Eve of Nashville, Tenn., and Dr. Hunter McGuire of Richmond, professor of surgery in the Medical College of Virginia, but perhaps better known as the chief surgeon of "Stonewall" Jackson's Corps in the Army of Northern Virginia.<sup>21</sup>

The collections of the Museum, housed on the third floor of the building, were lighted by windows front and rear and by a large central skylight. Beneath the skylight was an oblong opening in the floor which let the light fall into the space below. All available wall space was covered with display cases, which also stood in ranks on the floor. In these cases, which were of pine and painted white, the specimens were exhibited. Most of the surgical specimens were mounted "dry," while almost all the medical specimens were "wet" preparations, preserved in wide-mouthed jars, closed with ground glass stoppers to the undersurfaces of which were attached glass hooks from which the specimens were suspended in the preservative fluid (fig. 28).<sup>22</sup>

### *The Museum and the Congress in the 1870's*

While supplies of alcohol distilled from confiscated whisky remained ample, at least until 1876, with the growth of the Museum and its work, the annual appropriation of \$5,000—which had seemed ample to Dr. Otis in 1865—ceased

<sup>20</sup> Woodward, *Lippincott's Magazine*, VII (1871), pp. 236, 237, 239.

<sup>21</sup> (1) Otis, George A.: Notes on Contributions to the Army Medical Museum by Civil Practitioners. *Boston Medical & Surgical Journal* 98: 163-169, 1870. (2) Lamb, D. S.: The Army Medical Museum—A History. *Washington Medical Annals* 15: 9, January 1916. (A paper presented before the Medical Society of Washington, 1 November 1915.)

<sup>22</sup> Woodward, *Lippincott's Magazine*, VII (1871), pp. 234, 236.



FIGURE 28.—Wet specimens on display enclosed in glass.

to be sufficient. The Surgeon General accordingly addressed a letter to the Honorable James A. Garfield, chairman of the Committee on Appropriations of the House of Representatives, on 6 January 1872, justifying an estimate of \$10,000 for the Museum and also the Surgeon General's Library. "No institution," he said, "has reflected greater credit upon its Government both at home and abroad than the Army Medical Museum and its present size and steady increase render the expense of keeping it in good order and preservation larger than heretofore, although still small when compared with the cost of other institutions of similar character." The request was looked upon with favor, but the Senate Appropriations Committee cut the item from \$10,000 to \$5,000 whereupon, on 15 May, General Barnes wrote Chairman Cole, urging reconsideration and stating that the lesser sum was not sufficient to maintain the growing collection and "to make some of the more valuable results known to the profession of the country, a course which has been pursued so far as means would allow." The appeal for restoration of the House figure was not successful, and the next year's appropriation remained at \$5,000.<sup>23</sup>

An interesting sidelight is thrown on the problem of the congressional relations of the Museum by a bit of correspondence between Curator Otis and Brevet Lieutenant Colonel John Shaw Billings of the Surgeon General's Office, preserved in the Armed Forces Institute of Pathology records. On 7 May 1870,

<sup>23</sup> On file, National Archives, Accession Number 421, Letter Book Number 50, SGO, pp. 37, 245.

Otis wrote, "I have on hand about thirty volumes of surgical photographs. Is it practicable to have them bound at the Congressional Bindery?", to which inquiry Dr. Billings responded on the same day, "Dear Doctor: I do not think it will be well to try to get any binding done at the Gov't. office until Congress adjourns. It wouldn't be done I am sure and I doubt whether the attention of the Committee on Printing would not be called to it—which thus far has been avoided."<sup>24</sup>

### *Enlarging the Aims of the Museum*

Despite limited financial support, the Museum continued to grow. By 1876, in its 10th year in the Ford's Theater building, the surgical section contained 6,539 specimens, the medical section 1,279, the microscopical section 7,275, the human anatomical section 1,254, the comparative anatomical section 1,522, and the section for miscellaneous articles 240. The primary emphasis remained on preserving specimens illustrative of the wounds and diseases which produced death and disability in the military forces, with the purpose of reducing mortality and alleviating suffering among soldiers, but by 1876, Dr. Woodward wrote, it had become "the desire of the Surgeon General that so far as the means placed at his disposal will permit, the collection shall be extended so as to embrace all forms of injuries and diseases, so that eventually it shall become a general pathological Museum, accessible for study to all medical men who are prosecuting original inquiries \* \* \*."<sup>25</sup>

That the original purpose remained uppermost is indicated by the reports of foreign observers, who were struck by the richness of the collections in gunshot and arrow wounds, and were impressed with the diligence and devotion which had permitted the making of such collections in the midst of a great war. "Among the foreign visitors, whose wide experience made their commendation peculiarly gratifying," said The Surgeon General in his annual report for 1875, "were Baron Schwartz-Sanborn, Director of the Vienna World Exposition of 1873, and Professor John Eric Erichsen, of University College, London." Professor Erichsen, who visited the Museum in the fall of 1874, said in a lecture on American surgery at the University College on 9 November of that year:

There is one Museum which is so unique, so admirably arranged, and so interesting, that I must direct your attention to it for a few minutes. It is the Museum of the Army Medical Department at Washington. This magnificent collection, illustrating not

<sup>24</sup> Original letters on file in historical records of AFIP.

<sup>25</sup> (1) Lamb, *op. cit.*, p. 76. (2) Lamb, *The Military Surgeon*, 53 (1923), p. 125.

only every possible variety of gunshot and arrow injury, but also those diseases which are more fatal than the bullet to an army in the field or in camp, has under the able superintendence of Surgeon General Barnes, and of Drs. Otis and Woodward, been most admirably arranged and catalogued \* \* \*. Many of the specimens in this Museum are quite unique \* \* \*.<sup>26</sup>

### *Varied Uses of the Museum*

The Army Medical Museum became somewhat of a focus for the intellectual and scientific life of the Washington of the 1870's. The fortnightly meetings of the Philosophical Society, the leading intellectual group of Washington, were held at the Museum, and the charter meeting of the now famous Cosmos Club, and its first election of officers, was held at the Museum on 13 December 1878.<sup>27</sup> When the American Medical Association met in the Capital in 1868, the Museum was the scene of a reception to its members given by The Surgeon General. A like courtesy was extended to the members of the National Academy of Sciences in 1870. Upon both occasions, as well as at other times, Dr. Woodward showed transparencies of some of the remarkable photomicrographs made at the Museum. Another notable visitor for whom The Surgeon General had a reception at the Museum, on 11 December 1872, was Prof. John Tyndall of London, whose studies in sterilization by heat had not yet reached their culmination but who, already, had dealt mighty blows to the theory of spontaneous generation.<sup>28</sup>

### *Scientific Skepticism As to Bacteria*

Just a month before the reception at the Museum for one whose careful researches were to do so much toward establishment of the theory of bacterial infection, Dr. Woodward paid his respects to the theory, in a letter to the editor of the Washington *Evening Star*, published on 13 November 1872. "During the last few years," the letter read, "it has been a favorite speculation in certain quarters, that epidemic diseases are produced by the presence in the atmosphere of vegetable germs, so minute as to be visible only with the microscope. Considerable labor has been bestowed upon microscopical work in this direction, but the results which have been confidently announced from time to time by

<sup>26</sup> (1) Annual Report, Surgeon General Barnes, 1875, p. 12. (2) *The Lancet*, London, 1874, II: 720 (quoted in Lamb, *op. cit.*, pp. 67, 68).

<sup>27</sup> *Cosmos Club Bulletin*, Washington, volume 13, Number 3, March 1960, p. 4.

<sup>28</sup> Lamb, *op. cit.*, pp. 49, 51, 54, 55, 57, 62.

enthusiasts have been either contradicted or so materially modified by subsequent observations that the question still remains in the domain of mere speculation." Referring to the opportunities for "charlatanism" and for honest mistake in this field, he added, "nevertheless I certainly regard the microscopical forms which exist in the atmosphere and their possible effect on man as a proper matter for scientific study, and by way of contributing my mite to the difficult subject \* \* \* I have collected the organic forms from a quantity of air of a stable in this city where there are a number of sick horses, and submitted them to the highest power of the microscope, without finding any which are not usually encountered when no epidemic is prevailing \* \* \*."<sup>29</sup>

His opinion had undergone little change when, 7 years later, in part II of volume I of the "Medical and Surgical History of the War of the Rebellion," he used with approval the derisive term "bacterianatics" and, speaking of the persistence of the "general hypothesis that bacteria are in some way disease-producers," said that Virchow's "splendid rhetoric has lent plausibility to arguments which appeal almost as much to faith as to reason." Dr. Woodward was well aware of the presence of inconceivable numbers of bacteria, but he was doubtful of the disease-producing effects of what he referred to, somewhat slightly, as "those convenient bacteria which have played so conspicuous a part in modern pathological speculation."<sup>30</sup>

Ironically, the expressions of scientific skepticism on the part of Dr. Woodward were published 2 years after Capt. A. C. Girard, stationed at Fort Randall, Dakota Territory, had reported enthusiastically on the results of Joseph Lister's technique in antiseptic surgery, which he had observed on a trip to Europe. Captain Girard was willing to "leave to other pens the task of elucidating" the nature of bacteria and how they acted upon the body, but he stoutly maintained "the indisputable fact that there *are* germs or ferments in the atmosphere which will produce putrefaction in wounds, and that by preventing their ingress we can in most cases avert the complications which cause the greatest fatality in surgery \* \* \*. This is the key to Lister's system." Captain Girard's report was published to the Medical Corps in Circular Orders No. 3, Surgeon General's Office, 20 August 1877, but, perhaps because the report and the Lister system dealt with surgery while Dr. Woodward was concerned with medicine, neither the Girard report nor Lister himself is mentioned in the 1879 volume of the History.

<sup>29</sup> (1) Lamb, *op. cit.*, pp. 61, 62. (2) Lamb, *The Military Surgeon*, 53 (1923), pp. 120, 121, 123.

<sup>30</sup> Medical and Surgical History of the War of the Rebellion. Medical History. Washington: Government Printing Office, 1879, pt. II, vol. 1, pp. 370, 374, 595.

### *The Third Curator*

The stupendous task of compiling and writing the Medical and Surgical History was drawing to its close when, in May 1877, Dr. Otis suffered a stroke of paralysis, and in May 1880, Dr. Woodward was compelled by the state of his health to go to Europe. On 23 February 1881, Dr. Otis died, at the early age of 51, and was succeeded as Curator of the Museum by Surgeon David Low Huntington, U.S.A. (fig. 29), who also took over the task of completing the third and final part of the surgical volumes of the great History upon which Dr. Otis was engaged at the time of his disability and death.<sup>31</sup>

Back from Europe, Woodward suffered a broken leg on 1 January 1881, when his horse slipped and fell on him, but he was able to resume work at the Museum in time to be one of the physicians attending President James A. Garfield, when the President was shot and fatally wounded by Charles J. Guiteau on 2 July 1881. The shooting took place in the waiting room of the Baltimore & Potomac railroad depot in Washington, where the President had gone to board a train to join his wife on the New Jersey seashore. The first shot from Guiteau's pistol grazed the President's arm; the second entered his back and was not located until after his death on 19 September 1881. Probing failed to find it, as did an "induction-balance" device of Prof. Alexander Graham Bell which was supposed to locate metal objects by an electrically induced sound. Everything known to the medical art of 1881 was tried, but in the prevailing state of medical knowledge, there was nothing that could be done to save the President's life.

### *The Museum and the Garfield Tragedy*

Eighteen hours after his death, in a seaside cottage at Elberon, N.J., where the President had been taken to escape the heat of Washington and the miasmas of the swamplands south of the White House, an autopsy was performed by Dr. Daniel Smith Lamb, pathologist of the Museum, with Dr. Woodward acting as recorder (fig. 30). The autopsy disclosed the course and location of the fatal bullet, which had entered the victim's back about 4 inches to the right of his spine; had broken the eleventh and twelfth ribs to the right of the spine; passed through the first lumbar vertebra, missing the spinal cord; grazed the splenic artery; and stopped behind the pancreas, some 10 inches from the point of

<sup>31</sup> (1) Lamb, *op. cit.*, pp. 77, 80-82. (2) Lamb, *The Military Surgeon*, 53 (1923), p. 127.



FIGURE 29.—Surgeon David Low Huntington, U.S. Army, third Curator of the Museum, 1881-1883.

entrance.<sup>32</sup> The President's vertebrae are preserved in the Medical Museum, with the course of the bullet traced through them by a plastic rod.

Dr. Woodward's health failed early in 1882, and in February he left for Europe—to return no more to the Museum. He did not participate in the

<sup>32</sup> (1) Lamb, D. S.: Official Record of the Postmortem Examination of the Body of President James A. Garfield. *American Journal of the Medical Sciences* 82: 583-590, 1881. (2) Lamb, *op. cit.*, p. 82.

I hereby certify that the  
within pistol bullet was, in  
the presence of Surgeon  
General J. K. Barnes, Surgeons  
J. J. Woodward, Robert  
Reyburn, Frank H. Hamilton  
D. Hayes Agnew, S. A. Boynton  
Dr. D. S. Lamb of medical autopsy  
~~Gen.~~ Dr. G. Swain, Col.  
A. T. Rockwell and Mr.  
C. O. Rockwell, taken from  
the body of James Abram  
Garfield, late President  
of the United States at the  
post mortem examination  
held in Franklin College  
Elberon N. J. <sup>during</sup> the afternoon  
of September 20, 1881.

D. S. Lamb

FIGURE 30.—Bullet from the body of President Garfield, located at autopsy by Dr. Daniel Smith Lamb, pathologist of the Museum.

autopsy performed by Dr. Lamb on Guiteau, the assassin, who was executed on 30 June 1882. Special attention was given to the brain, sections of which were parceled out to eminent alienists for examination, but no evidence of unusual pathological change was found.<sup>33</sup>

Thus it was, that in the first 20 years of its life, the Museum attachés were called upon to participate in the activities growing out of the assassinations of two Presidents of the United States, and the Museum itself became the repository of the melancholy medical memorabilia of two great national tragedies.

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<sup>33</sup> (1) Lamb, *op. cit.*, p. 83. (2) Lamb, *Washington Medical Annals*, 15 (1916), p. 11. (3) *Medical News*, Philadelphia, volume 41, p. 13, 1882.

## CHAPTER IV

# Broadening the Base

The Ford's Theater building was at best a makeshift home for the Museum, the Library, and the historical records of the Surgeon General's Office, and with the passage of time and the growth of the collections, it became less and less suitable. By 1880, it has ceased to be adequate for the Museum alone, even if all its space had been available for museum purposes. As it was, the Museum was confined to the crowded and cluttered third floor, the books of the Library were packed two and three rows deep on the shelves on the second floor, and the hospital records of the Civil War, with the clerks at work on them, filled the ground floor to overflowing. "In time," wrote Maj. Charles Smart, Surgeon, U.S. Army (fig. 31), who was assigned to complete the work on the medical volumes of the History after Dr. Joseph J. Woodward's disability, "there came to be no room for even the storage of books and specimens, not to speak of facility of reference or advantageous display."<sup>1</sup>

There was, moreover, distinct danger of utter destruction of irreplaceable records and materials by fire. The floors were of noncombustible materials, it is true, but the roof was not, and the walls were so weak and so much out of plumb as to threaten imminent collapse in case of fire. Indeed, the ordinary use of the building was limited by a prohibition "against putting heavy articles in the upper floor for fear of pushing out the west wall."<sup>2</sup>

### *Inadequate Quarters*

In his annual report for 1880, Surgeon General Barnes "invited attention to the overcrowded and unsafe condition" of the 10th Street building. Growth of the collections, he wrote, had made "the space available for their preservation quite inadequate, not merely for their proper display, but even for satisfactory

<sup>1</sup> Smart, Charles: The Army Medical Museum and the Library of the Surgeon-General's Office. *Journal of the American Medical Association* 24: 577, 20 April 1895.

<sup>2</sup> Congressional Record, 48th Congress, 2d session, p. 1767. [That fears for the safety of the Ford's Theater building were not exaggerated was demonstrated on 9 June 1893, when the floors fell through to the basement with a loss of 22 lives and 68 injuries.]



FIGURE 31.—Maj. Charles Smart, Surgeon, U.S. Army.

storage." The Surgeon General earnestly recommended an appropriation for a building which should be "absolutely fireproof, but no expenditure for mere architectural display is required."

Pursuant to The Surgeon General's recommendation, President Rutherford B. Hayes, in his last annual message to Congress, urged such an appropriation. "The collection of books, specimens, and records constituting the Army Medical Museum and Library are of national importance," the President said. " \* \* \* Their destruction would be an irreparable loss not only to the United States but to the world \* \* \*. These valuable collections are now in a building which is peculiarly exposed to the danger of destruction by fire. It is therefore earnestly recommended that an appropriation be made for a new

fireproof building, adequate for the present needs and reasonable future expansion of these valuable collections. Such a building should be absolutely fireproof; no expenditure for mere architectural display is required. It is believed that a suitable structure can be erected at a cost not to exceed \$250,000.”<sup>3</sup>

The movement for a new building was furthered by Surgeon General Barnes in a letter of December 1881, to Secretary of War Robert T. Lincoln, son of the President. The Library, he said, contained 51,500 volumes and 57,000 pamphlets, while the 22,000 specimens of the Museum were “unique in the completeness with which both military surgery and the diseases of armies are illustrated.” These collections, he added, “although originally founded chiefly” for purposes of military medicine, “have proved to have manifold uses in connection with the general progress of medical science in the United States, especially in relations to the public health, uses which are perhaps of equal importance to the nation.”

As to the worth in money to be placed on the collections, The Surgeon General wrote that the value of that part of the Government property collected in the old building “which could be replaced by money” could not be less than \$250,000, but that “much of it could never be replaced, either by time or money.”

Surgeon General Barnes had the satisfaction of seeing his recommendation approved by Secretary Lincoln on 6 January 1882, and made the subject of a special message to Congress by President Chester A. Arthur, on the 19th of the same month.<sup>4</sup>

On 28 February 1883, almost at the end of the second and final session of the 47th Congress, and too late for further action, the House Committee on Public Buildings and Grounds reported favorably on the bill, H.R. 7681, appropriating \$200,000 for a building in the vicinity of the National Museum and the Smithsonian Institution:

The collections of records, books, and museum specimens, \* \* \* in imminent danger of destruction, are of great national importance \* \* \*. The Library now contains about 70,000 volumes \* \* \*. The museum is by far the best collection of materials relating to military medicine and surgery in existence. They number over 20,000 specimens \* \* \*. Some 40,000 persons visited the museum during the year 1881 \* \* \*.

The medical profession throughout the country have presented to the committee a large mass of testimony commanding the unequalled collections, both of the Library and

<sup>3</sup> “Documents with Reference to Proposed Building for the Army Medical Museum and Library of the Surgeon General’s Office”—Copy of Report No. 1991, annex B, Committee on Public Buildings and Grounds, on H.R. 7681, 47th Congress, 2d session, 28 February 1883.

<sup>4</sup> Senate Executive Document 65, 47th Congress, 1st session.

Museum, and have earnestly requested that suitable provision be at once made for their preservation \* \* \*.

The building proposed is plain, fireproof, with a large amount of floor space \* \* \* the building would cover an area of about 21,000 square feet, contain about 1,350,000 cubic feet, and at a cost of \$200,000, recommended by the bill, or about 15 cents per cubic foot.<sup>5</sup>

### *Support From the Medical Profession*

Before the new Congress, the 48th, opened its first session, the medical profession made further representations favoring a new building for the Museum and the Library. Professors Samuel D. Gross of Philadelphia, Austin Flint of New York, and Oliver Wendell Holmes of Boston, three giants in American medicine, addressed a letter to members of the American Medical Association calling attention to the need for a new building as a subject of great importance to the medical profession and to the public welfare. They wrote:

There has been formed at Washington, under the direction of the Medical Department of the Army, a Museum of Military Medicine and Surgery, and in connection with this, a Medical Library, each of which is believed to be the largest and best of its kind in the world.

The building in which these invaluable collections are stored, collections which can never be replaced if destroyed, is insecure, not fire-proof, in the midst of highly inflammable buildings, and overcrowded. At the close of the last session of Congress, too late for action, a bill appropriating funds for a fire-proof building \* \* \* was reported. It appears to the undersigned in the highest degree desirable that this bill should become a law at the next session of Congress, and to further this end, that the physicians of the United States should explain to the members of Congress \* \* \* the great importance of these collections of books and specimens, the propriety of granting the funds necessary for their maintenance and preservation, the inexpediency of separating them, or removing them from the management under which they have so successfully been conducted, and the necessity of a fire-proof building, that they may be handed down safely to coming generations.

Responding to his communication, the American Medical Association, meeting at Cleveland, Ohio, on 5-8 June 1883, adopted a strong memorial and named a special committee to present the matter to Congress and to call the attention of State medical societies to the importance of action. To the distinguished medical men who had originated the action, there were added on the special committee Doctors D. W. Yandell of Louisville, T. G. Richardson of New Orleans, and H. F. Campbell of Augusta—all three ex-Confederate surgeons and future presidents of the American Medical Association.

<sup>5</sup> H.R. Report 1995 (H.R. 7681), 47th Congress, 2d session.

Action in support of the new building taken by local, county, and State medical societies in at least 19 States was reported to the Congress by the special committee of the American Medical Association, which also addressed its own communication to Congress on behalf of the national association, stressing "the urgent need to secure the preservation and full benefits" of the Museum and Library. "These collections," the committee said, "already the largest and most valuable of their kind in the world, are of the greatest importance, not only to the physicians of this country but to all whose welfare and lives depend on medical skill; and hence what we ask is emphatically for the general good."<sup>6</sup>

### *A New Surgeon General Presses for a New Building*

Before further action toward a new building was taken, Surgeon General Barnes, who had retired in 1882, died in April 1883. His successor in office, Charles H. Crane, who had been Assistant Surgeon General since 1863, also died in October 1883, and was succeeded as Surgeon General by Robert Murray.<sup>7</sup>

General Murray continued to press the movement for a new building, filing with Congress a printed document setting forth the "imperative need of such a building" and the "pressing necessity of placing in security these collections, probably the most valuable of the kind in the world."<sup>8</sup>

General Murray's submittal was in support of bills introduced in the Senate by Senator Joseph R. Hawley of Connecticut (S. 403) and in the House by Gen. William S. Rosecrans, Representative from California (H.R. 48), in December 1883, in the early days of the first session of the 48th Congress.<sup>9</sup> On 13 December 1883, Secretary Lincoln, renewed his recommendation, remarking that he did so the more strongly because the appropriation of \$200,000

<sup>6</sup> (1) Congressional Record, 48th Congress, 2d session, p. 1768. Documents, Proposed Building, *loc. cit.*, pp. 3-6. (2) Scrapbook of clippings. On file in historical records of AFIP.

<sup>7</sup> In announcing General Barnes' death, the Adjutant General's office ascribed to him the founding of the Medical Museum and the launching of the History. Dr. Hammond called attention to the error, which resulted in a change in the general order, which was made to read "Under the fostering care of Edwin M. Stanton, Secretary of War, he (General Barnes) accomplished the successful establishment of the Medical History of the War and the Medical Museum." Taking the word, "'accomplished' in its primary signification of 'completed,'" Dr. Hammond was satisfied with the amendment. General Barnes, he said, "'completed' their successful establishment." (From the official correspondence between Surgeon General William A. Hammond, U.S. Army, and the Adjutant General of the Army, relative to the founding of the Army Medical Museum, and the inauguration of the Medical and Surgical History of the War of the Rebellion, New York, 1883).

<sup>8</sup> Senate Executive Document 12, 48th Congress, 1st session.

<sup>9</sup> Congressional Record, 48th Congress, 1st session, pp. 37, 59. [General Rosecrans was in command in West Virginia where the future General Hammond, founder of the Medical Museum, made his first reputation in the Civil War.]

provided by the bill was \$50,000 less than the amount originally proposed. On the 17th, President Arthur again submitted the documents in the case to the Congress, and the bills and the recommendations were referred to the respective Committees on Public Buildings and Grounds of the two houses of Congress, to which also went the numerous petitions and memorials of the medical profession.<sup>10</sup>

On 28 May 1884, William Mahone, late major general in the Confederate service but then Senator from Virginia, reporting for the Committee on Public Buildings and Grounds, submitted an amended bill for S. 403, carrying an appropriation of \$200,000, which the Committee recommended for passage and which, on 3 June, was passed by the Senate and sent to the House.<sup>11</sup>

It was not until the second and final session of the 48th Congress was nearing its close, however, that final action was taken. On 16 February 1885, H.R. 48, the bill introduced by General Rosecrans, came before the House of Representatives. The bill, appropriating \$200,000 recommended for passage by the Committee, was submitted by its chairman, Representative Strother M. Stockslager of Indiana.

### *Objections to Proposed New Building*

Opposition was expressed on the grounds that the medical records of the Civil War should be housed in the Pension Building or in the State, War, and Navy Building, both of which were then under construction; that the medical library should be merged with the Library of Congress in the building then in contemplation; and that the Medical Museum could be accommodated either in the new State, War, and Navy Building or in the Smithsonian Institution. One opponent, Mr. Potter of New York, went further, saying that he did not believe in "preserving the relics and bones or wounds caused by the war at any place in our capital" and expressing the wish that "they were all buried and covered all over with green grass and hidden from sight forever."

To meet objections, proponents of the new building pointed out that the buildings then being constructed for other purposes would not be adequate to house the collections and the records of the Surgeon General's Office; also, that these features should be kept together, and that the present building, in the words of Representative Stockslager, was a "mere tinder-box" and in an "absolutely dangerous condition."

<sup>10</sup> Senate Executive Document 12, 48th Congress, 1st session.

<sup>11</sup> Congressional Record, 48th Congress, 1st session, pp. 4603, 4766.

In the course of the debate, Representative Lyman, of Massachusetts, expressed the views of an informed layman on the state of the medical art and the contributions of the Museum to medical progress. "Most of the progress" in medicine and surgery, he said, "has been made during the last half century, and the next fifty years promise a great advance \* \* \*. There is no subject more baffling, and yet it is yielding to study. Already the studies of disease have rendered it highly probable that these plagues are caused by the fertilization of microscopic germs within the body; so that these diseases are a death struggle between man and a parasitic fungus. But already we discern a hope that these germs may be used for inoculation and may protect us from such diseases, just as vaccination protects against smallpox."

"These profound studies, so essential to the welfare of our people, are carried on under the fostering care of our National Medical Museum, whose library, now the first in the world, and whose not less admirable collection of military pathology are placed at the disposal of all investigators."

After an hour's vigorous debate, H.R. 48 was passed by a vote of 181 to 23. Transmitted to the Senate, the bill was recommended for passage by the Committee, which reported its action through Senator Lott Morrill of Vermont, and was passed without objection. On 3 March, the last day of the session, President Arthur reported to Congress that, on the day before, he had signed the bill, which thereby became law.<sup>12</sup>

The bill, as finally passed, authorized the construction of a brick and metal building upon the government reservation in the vicinity of the National Museum and the Smithsonian Institution, the exact site to be selected by a commission composed of the Secretary of War, the Architect of the Capitol, and the Secretary of the Smithsonian. The building was to be in accordance with plans and specifications submitted by The Surgeon General of the Army and approved by the above Commission. Construction was to be under the direction and superintendence of the Secretary of War, and at a cost not to exceed \$200,000.<sup>13</sup>

### *John Shaw Billings Becomes Curator*

During the years in which the matter of a new home for those institutions was before Congress, a noteworthy change in the organization and personnel of the Museum and Library took place when, on 28 December 1883, the two were consolidated into one division to be known as the Museum and Library

<sup>12</sup> Congressional Record, 48th Congress, 2d session, pp. 1767-1770, 2117, 2177, 2569.

<sup>13</sup>(1) Public Law 62, 48th Congress, 2d session. (2) 23 U.S. Statutes at Large, ch. 315.

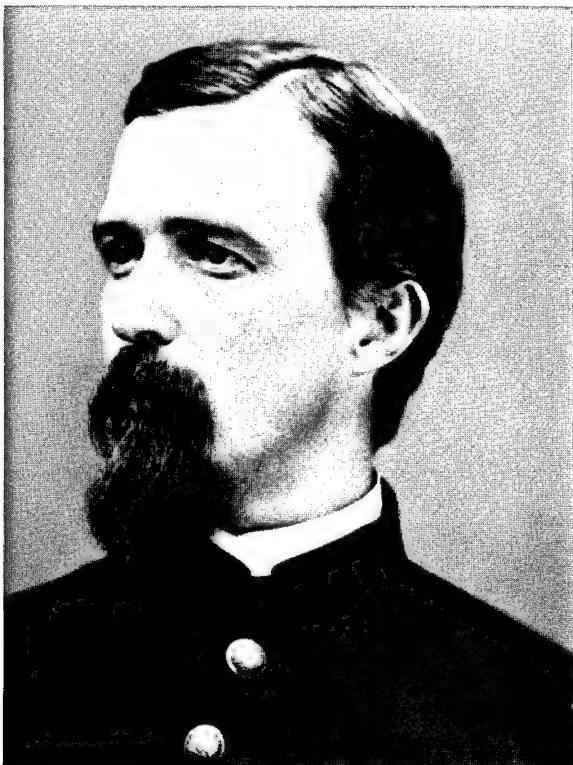


FIGURE 32.—Dr. John Shaw Billings, famed Librarian, fourth Curator of the Museum (1883-1893), and father of its collection of microscopes.

Division of the Surgeon General's Office, and Maj. John Shaw Billings (fig. 32) was named as Curator of the Museum as well as Librarian.<sup>14</sup>

Dr. Billings was 45 years of age when he was detailed for the double duty of Librarian-Curator. Born in Indiana in 1838, he was educated at the "old" Miami University at Oxford, Ohio, and received his M.D. degree at the Medical College of Ohio in Cincinnati. Four years of wartime service as a brilliant operating surgeon and medical administrator led to his detail in the Office of the Surgeon General where, among other duties, he was assigned to the care of the little library of that office. This library, started in 1836, had grown, by 1865, to fewer than 2,000 volumes. When, 30 years later, Colonel Billings relinquished his post as Librarian, the collection had grown to 115,000 bound volumes and 184,000 unbound pamphlets and papers.<sup>15</sup> Moreover, this vast collection of medical information had been made accessible and usable by the publication

<sup>14</sup> National Archives, Accession Number 421, SGO Circular, 1881-1885, p. 162.

<sup>15</sup> Smart, *Journal of the American Medical Association*, 24 (1895), pp. 579-580.

of the "Index-Catalogue," started by Dr. Billings in 1880, in which both subjects and authors are listed alphabetically and "*every article from every issue of every journal from every country*" was indexed.<sup>16</sup>

On 17 August 1884, Dr. Woodward died in a hospital near Philadelphia at the early age of 51. In announcing his death, Surgeon General Murray outlined the highlights of a distinguished professional and scientific career which had culminated with his election as president of the American Medical Association for 1882, being the first medical officer of the Armed Forces to be so honored. The "confinement, anxiety and labor" to which he "was subjected in his attendance upon the late President Garfield during his long illness proved too much for a mind and body already over-strained by incessant labor," said The Surgeon General, "and precipitated the illness which finally terminated his life."<sup>17</sup>

As was anticipated when the enabling legislation was before Congress, the Commission charged with responsibility for the erection of the new building for the records, library and museum, on 25 March 1885, selected a site fronting 270 feet on the north side of B Street, SW. (now Independence Avenue), and extending back 170 feet on the west side of 7th Street.<sup>18</sup> Three weeks later, on 15 April, The Surgeon General was called upon to furnish plans and specifications.

The plans (fig. 33) were drawn by Adolph Cluss, architect, according to the ideas of Dr. Billings, acting for The Surgeon General, and after Commission approval, the contract was let, on 18 August, to the firm of Bright & Humphrey. Completion was, as usual, delayed beyond the contract date, making it necessary for the Government to pay rent for 2 additional months on quarters on F Street, occupied by 156 clerks of the Record and Pension Division, and to threaten heavy penalties if the rented quarters were not vacated by August 1887. In a letter to Col. John M. Wilson, the officer in charge of public building and grounds for the Secretary of War, the new Surgeon General, John Moore, on 20 June 1887, outlined a proposed schedule of partial completions with appropriate moves of units into portions of the new building. He concluded with a proposal for a 3-month extension if by 1 August Bright & Humphrey had "so forwarded their work that there is a reasonable certainty" of carrying out the schedule proposed. Otherwise, Surgeon General Moore recommended that the Government take steps to have the work completed by others and be reim-

<sup>16</sup> Hume, Edgar Erskine: *Victories of Army Medicine: Scientific Accomplishments of the Medical Department of the United States Army*. Philadelphia: J. B. Lippincott Co., 1943, pp. 48, 49.

<sup>17</sup> (1) Memoir of Joseph Janvier Woodward, 1833-1884, by J. S. Billings. (Read before the National Academy of Sciences, April 22, 1885.) War Department Records, Office of the Surgeon General. On file in National Archives. (2) Biographical Memoirs, National Academy of Sciences, volume 2, 1886.

<sup>18</sup> Original letters in File 4938, Office of the Surgeon General, National Archives.

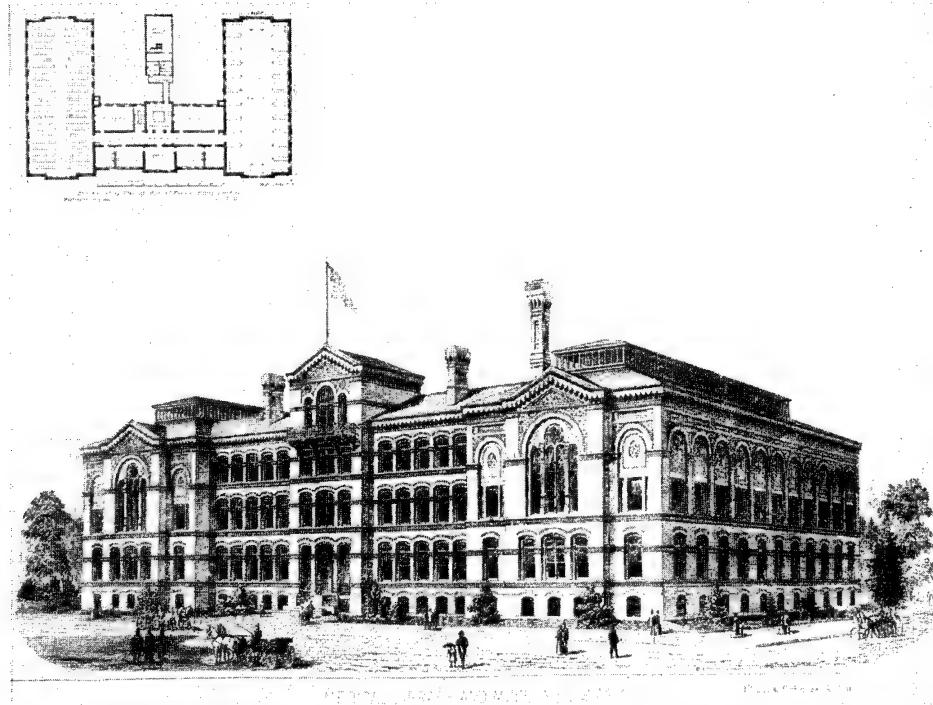


FIGURE 33.—Fifth home of the Museum. The view of the building shown here is from the architect's drawing.

bursed for losses and extra charges incurred. Apparently, the work was "so forwarded" by the original contractors, and on 9 November Colonel Wilson formally transferred the building to Surgeon General Moore.<sup>10</sup>

### *The Museum Moves*

From November 1887 until 15 February 1888, the Museum was in the process of moving into the new building. The process was somewhat complicated by the fact that the display cases were found to be a little too high to go through the doors and had to be taken through a large window on the front end of the second-floor Museum Hall.

In copy prepared by or for Colonel Billings for use in a guidebook which was never issued, the building is described as "exceedingly plain, without ornamentation," while to Major Smart it was "severely simple in style." To a lady writing for *Godey's* magazine in 1898, the building was a "plain red brick structure." The profusion of brick and terra cotta embellishment on the ex-

<sup>10</sup> *Idem.*

terior of the building raises a question as to how much ornamentation would have been required in the 1880's and the 1890's to cause a building to be considered elaborate.

The structure, according to the proposed guidebook, consisted of a center building 112 by 55 feet, with wings 60 by 131 feet on either end. Thus the building had a front of 232 feet on B Street, with wings jutting back 81 feet beyond the rear line of the center building. In the courtyard thus formed, there was an annex 52 by 24 feet, connected with the rear of the center building by a covered passageway.

The central and western portions of the first floor were largely occupied by the clerks of the Record and Pension Division, while the east wing was given over to appanages of the Museum—a dissecting room, an anatomist's room, a darkroom, a room containing the outfit for a post hospital, and a room for genitourinary specimens considered unsuited for display in a museum open to all comers.

The east wing on the second floor was given over to the specimens of the Museum, the west wing to shelf stacks of the Library, while the central portion of the floor was occupied by library offices and reading rooms. The Library and the Museum wings were built so as to form fireproof compartments separated from the other parts of the building. Both were open from the second story to the roof, forming halls 31 feet high to the eaves and 47 feet to the ridge of the lantern skylights by which they were ventilated and lighted. The Museum wing also had, on the level of the third floor, a gallery 14 feet wide, extending clear around the hall.

Rooms on the third floor were used as offices, a microscopy room, and a room equipped for anthropometry. The fourth floor, found in the central building only, contained the photographic gallery and several storerooms, two of which were filled with appliances, for transporting the sick and wounded in the field, for which no space could be found in the exhibit hall of the Museum. The anatomical and biological laboratory was contained in the annex, in which were found also the utilities and the limited and somewhat primitive sanitary facilities.<sup>20</sup>

<sup>20</sup> (1) Lamb, D. S.: A History of the Army Medical Museum, 1862-1917, compiled from the Official Records. Mimeographed copy in historical records of AFIP, pp. 93-95. (2) Lamb, D. S.: Army Medical Museum, Washington, D.C. The Military Surgeon 53: 129, 130, August 1923. (3) Smart, *Journal of the American Medical Association*, 24 (1895), pp. 579-580. (4) Smart, Charles: The Army Medical Museum and the Library of the Surgeon General's Office. Journal of the Military Service Institution of the United States 19: 277-279, 1896. (5) Kyle, Joanna R. N.: The Army Medical Library and Museum. Godey's Magazine 136: 408-418, 1898.

The office rooms were graced with fireplaces and mantels, while the large library and museum halls were warmed by air passed over steam-coils in the basement and supplied by ducts, in addition to steam radiators. Corridors and stairways were heated by radiators.

Such was the building which was destined to be for nearly 70 years the home of the Army Medical Museum and its successors, the Army Institute and then the Armed Forces Institute of Pathology, and which after an absence of 7 years was to be reoccupied by the Museum and the overflowing activities transferred from the main building of the Institute.

### *A Shift in Emphasis*

With a new home and a new curator, there was a shift in emphasis in the work of the Museum. The new concept of that work attributed to Dr. Billings in a dispatch of 18 September 1886, in the *Medical News* of Philadelphia, was as follows:

1. To illustrate the effects, both immediate and remote, of wounds and of the diseases that prevailed in the Army.
2. To illustrate the work of the Army Medical Department; models of transportation of sick and wounded, and of hospitals; medical supplies; instruments; etc.
3. To illustrate human anatomy and pathology of both sexes and of all ages.
4. To illustrate the morphological basis of ethnological classification, more especially of the native races of America, including anthropometry, and craniology.
5. To illustrate the latest methods and apparatus for biological investigations and the various methods of preparing and mounting specimens.<sup>21</sup>

Surgeon General Moore, in a circular letter issued 15 September 1888, after the move to the new building was completed, "respectfully invited" the attention of all physicians to the fact that the Museum was "now arranged in a convenient fire-proof building which affords means for the proper preservation and display of specimens" and requested their aid in making it "a complete representative collection covering all branches of medicine." To that end, the circular outlined in great detail the types of specimens especially desired and the methods of "preserving them so as to make them most useful."<sup>22</sup>

### *The "Old" and the "New" Museums*

In keeping with this broader concept, there gradually developed a separation in the exhibits of the Museum, with lessening emphasis on the "missiles, weapons,

<sup>21</sup> *Medical News*, Philadelphia, volume 49, p. 330.

<sup>22</sup> Memoir of Joseph Janvier Woodward, 1833-1884, by J. S. Billings. (Read before the National Academy of Sciences, April 22, 1885). War Department Records, Office of the Surgeon General. On file in National Archives.

fractures, excisions, amputations, and other specimens of the Civil War," which tended to be placed in the gallery. "In fact," Major Smart wrote (in 1895) "the museum of the old Ford's Theater building may here [in the gallery] be recognized, while that on the floor of the hall is relatively a new institution."<sup>23</sup>

The central space of this "new institution" was occupied by flat-topped glass cases in which were displayed various surgical instruments, including the beginnings of the collection of microscopes, started by Dr. Billings in 1884 with 17 instruments obtained in Europe—a collection which has grown to number nearly 500 microscopes. These instruments date from the earliest times, including a replica of the single-lens microscope through which Van Leeuwenhoek first saw the "little animals" in a drop of water—generally recognized as the beginning of the microscopic era—and extending to the most elaborate optical types and the ultra-modern electron and phase-contact instruments (fig. 34).

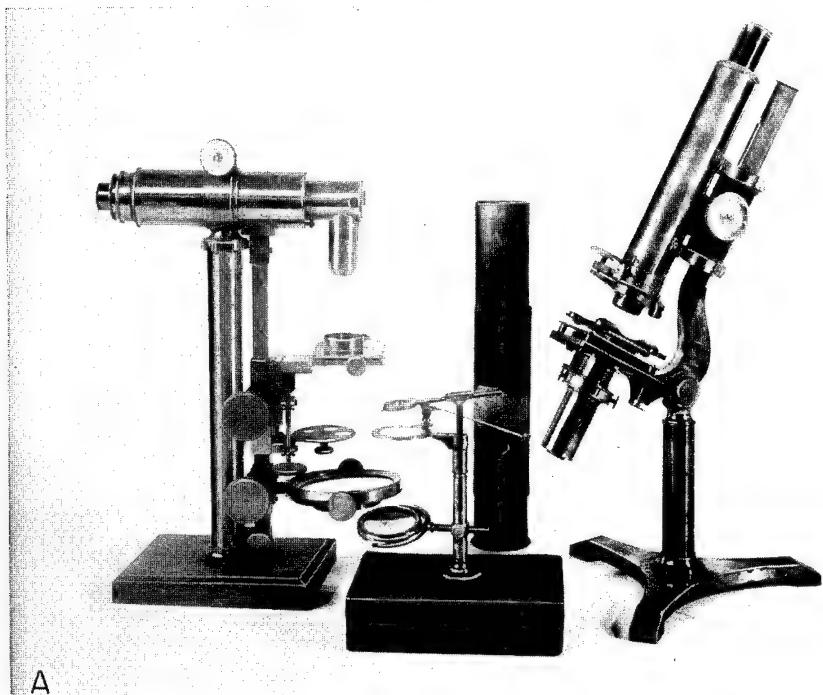
In a series of display cases projecting from the walls, the Museum displayed anatomical and pathological specimens so arranged as to tell, for each organ and region of the body and for the human organism as a whole, the story of normal development, abnormal deviations, disorders and diseases, and repairs and restoration, including that by surgery.

The displays of the Museum, together with the specimens held for study but not on display, were designed to broaden and deepen the lessons learned in the Library by adding to the reading of the printed word the impact of the tangible and visible object, the thing itself.

### *Dr. Billings' Appraisal*

The Museum, which was moved into the new building, contained nearly 27,000 specimens, probably more than there were in any other like museum in the world. Comparison of the number of specimens, however, in the opinion of Dr. Billings, "would give an exaggerated and erroneous idea of the value of this collection" in relation to others. "The most important medical museum in the world," he said in his presidential address before the Congress of American Physicians and Surgeons on 20 September 1888, "and the one which has exercised the greatest influence in giving direction to anatomical and pathological studies \* \* \* is undoubtedly that of the Royal College of Surgeons of London, the foundation of which was the collection made by John Hunter, purchased by the government in 1799 \* \* \*. At first the Army Medical Museum was limited to military medical subjects, but of late years its scope has

<sup>23</sup> Smart, *Journal of the American Medical Association*, 24 (1895), p. 580.



A

FIGURE 34.—Foundation and evolution of the microscope collection. A. The instruments shown are from the original 17 sent by John Mayall of the Royal Microscope Society of London.

been greatly broadened, and is now clearly the same as that of the Royal College of Surgeons."

Speaking "On Medical Museums, with special reference to the Army Medical Museum at Washington," Dr. Billings declared that the "object of this address is not to boast of what we have, but to indicate what we want." The Museum, he said, had "only a beginning of such an anatomical collection as I have indicated is desirable \* \* \*. We are accustomed to think that human anatomy is exhausted as a field for original research," a view to which the speaker did not subscribe. "There is ample material and scope for original work for half a dozen skilled anatomists for many years to come to supply the demands of this museum for illustrations of human morphology \* \* \*," he added.

"The pathological section of a Medical Museum is its main feature," he said. "No doubt much of the ancient pathology, and some of that which is quite recent, is comparable to the looking in the dark for a black spot which is not there, but those who despise pathology, and devote their entire time to



FIGURE 34.—Continued. B. A part of the famous microscope collection displayed in the Medical Museum.

symptoms and treatment, err as much on one side as those who talk and act as if a knowledge of pathological anatomy could take the place of clinical experience do on the other."

Although Dr. Billings was the author of "A Report on the Hygiene of the United States Army," published by The Surgeon General in 1875, and believed that "an ideal medical museum should be very complete in the department of preventive medicine, or hygiene," the collections of the Army Museum did not cover the subject except "in their immediate relations to the military medical service." Partly accounting for this was the existence of the Museum of Hygiene, under the direction of the Medical Department of the U.S. Navy.

"The objects of a medical museum are to preserve, to diffuse and to increase knowledge," Dr. Billings said in his presidential address. "Its conservative function is to form a permanent record of what has been demonstrated and to fix the meaning of terms. Even in my brief experience of thirty years the terminology of anatomy, physiology, pathology, chemistry, and of most of the specialties has greatly changed \* \* \*. To get useful results from the older

literature we must know the precise significance of the old words and, in some cases, the best way to learn this is to examine the specimens prepared by those who use such terms in their descriptions."

One of the advantages of the Medical Museum, which it enjoyed "in common with several of the largest, and most important museums, more especially those of the Royal College of Surgeons and of the Faculty of Medicine of Paris," pointed out by Dr. Billings, was its close association with "a large medical library which is in the same building, and at present under the same direction. The increased utility and attractiveness which this gives to both library and museum are very decided."

In the first place, in a "very condensed statement of the wants of our National Medical Museum," Dr. Billings listed "the intelligent interest and friendship of the medical profession \* \* \*. To a very considerable extent it has had that; were it otherwise it would not be what it is, nor where it is. But it needs more of it, and it can never have too much."

Referring to the fact that a large proportion of the pathological specimens "were gathered during a great war \* \* \* when antiseptic surgery, as now understood and practiced, was unknown," Dr. Billings predicted that this group, showing the "effects of pyogenic microorganisms on gunshot wounds," would never be duplicated. These and other Civil War relics, he said, "have an interest beyond that which is purely professional \* \* \*. The fact that we are physicians does not imply that we look upon them from a medical or scientific stand only. Those of the combatants who survive are now better friends than ever, and the museum specimens coming as they do from the sick and wounded of both armies, and contributed by both Union and Confederate surgeons, enforce the lesson of the unity of the profession and of its interests, as well as that of our country."

And, with prophetic vision, the Curator saw ahead to the idea of an institute of pathology cooperating with "earnest and well trained students" working on the museum's collections "so as to advance knowledge \* \* \*. To all such students we shall endeavor to afford opportunities for this work. Precisely how this is to be effected is not yet clear, but here is abundance to be done, and there are quite a number of men coming on the stage who want to do such work for its own sake \* \* \*. Sooner or later, we shall have half a dozen or more of specially trained men busy in the laboratories and work-rooms of the museum, each engaged on his own problems, and the whole for the common good."<sup>24</sup>

<sup>24</sup> *Medical News*, Philadelphia, volume 53, number 12, 22 September 1888, pp. 309-316.

## CHAPTER V

# An Ending and A Beginning

Shortly after the new building was occupied, in 1888, the sixth and final "part," comprising the two "volumes" of the monumental "Medical and Surgical History of the War of the Rebellion," was published. From its inception this project had been, in all but name, an integral part of the Museum operation. The first Curator of the Museum, Dr. John H. Brinton, had been the first editor of the Surgical volume, and he was succeeded in the editorship by Dr. George A. Otis, the second Curator, who brought out part I of that volume in 1870 and part II in 1876, leaving part III to be brought out by still another Curator, Dr. David L. Huntington, in 1883. The first and second parts of the Medical volume were edited by Dr. Joseph Janvier Woodward, coming out in 1870 and 1879, respectively, and the third and concluding part was edited by Dr. Charles Smart, the Army surgeon detailed to complete the History.

Each of the six "parts" is a massive volume in itself, averaging nearly 1,000 quarto pages of text, with an average of some 40 full-page plates, many in color, plus scores of black-and-white woodcuts. The volumes contain the reports of thousands of medical and surgical cases, usually in the words of the doctors who treated the wounds or diseases. In view of at least one unfriendly critic, indeed, the work was a "mere compilation of other people's writings,"<sup>1</sup> but it is far more than that. The History contains an orderly arrangement and presentation of vital statistics, while the body of the text summarizes, analyzes, and comments on the specific cases in the light of the best medical literature and thought of the times in which it was published. Thus, Dr. Woodward's skepticism as to the bacterial origin of disease, expressed in the volume issued in 1879, was replaced with a more tolerant view by Dr. Smart in the 1888 volume. He was not yet ready to admit that the "causal relationship of a micro-organism to the disease" of typhoid fever had "been established" but he discussed at some length the researches supporting that view and concluded, "Although the typhoid germ

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<sup>1</sup> *Sunday Herald*, Washington, 1 April 1883.

has not been recognized its existence is generally allowed, and many of the conditions needful to its development have been demonstrated.”<sup>2</sup>

All in all, the History merited the high praise which it received, even from such an outstanding and keenly critical authority as the great Rudolf Virchow, who wrote:

Whoever takes up and reads the extensive publications of the American medical staff will be constantly astonished at the wealth of experience therein found. The greatest exactness in detail, careful statistics even in the smallest matters, and a scholarly statement embracing all sides of medical experience are here united, in order to preserve and transmit to contemporaries and posterity in the greatest possible completeness, the knowledge purchased at so vast an expense.<sup>3</sup>

### *The Museum and the Army Medical School*

With the completion of the Medical and Surgical History (fig. 35), there ended the last major link tying the Museum to its Civil War origins. True, the majority of its specimens were the result of Civil War wounds and sickness, and the interest in Civil War specimens persisted, but there was the strong infusion of more recent and different pathological material and, more importantly, there was the new direction of thinking typified in the launching of the Army Medical School.

The idea of a medical school for Army personnel had been put forward as early as 1862, first informally by Brinton and his associates, and later by Surgeon General William A. Hammond in his report of 10 November to the Secretary of War, in which he recommended “an army medical school, in which medical cadets and others seeking admission into the corps, could receive such special instructions as would better fit them for commissions, and which they cannot obtain in the ordinary medical schools \* \* \*”.<sup>4</sup>

Like so many other of the excellent recommendations in this report, nearly all of which were ultimately adopted, the idea was rejected at first, to remain dormant for over 30 years until, in 1893, President Grover Cleveland appointed Lt. Col. George Miller Sternberg (fig. 36) to succeed Charles Sutherland as

<sup>2</sup> Medical and Surgical History of the War of the Rebellion. Medical History. Washington: Government Printing Office, 1888, pt. III, vol. I, pp. 492, 493.

<sup>3</sup> Hume, Edgar Erskine: Victories of Army Medicine: Scientific Accomplishments of the Medical Department of the United States Army. Philadelphia: J. B. Lippincott Co., 1943, pp. 152, 154, quoting, Morgan, William Gerry: Contributions of the Medical Department of the United States Army to the Advancement of Knowledge (With Particular Reference to Fields Not Directly Connected with the Practice of Military Medicine). The Military Surgeon 66: 779-790, June 1930.

<sup>4</sup> Annual Report of the Surgeon General, U.S. Army, 10 November 1862.

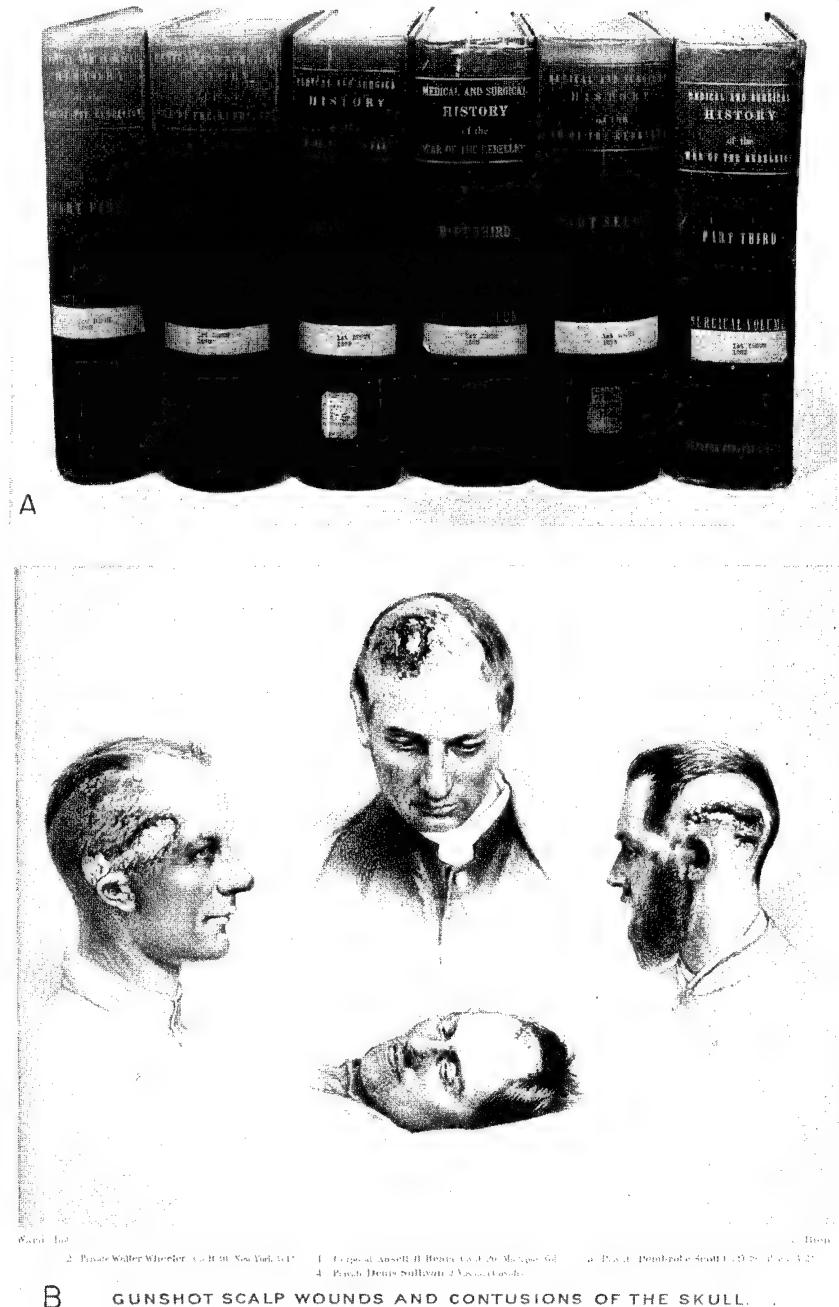


FIGURE 35.—A. Medical and Surgical History of the War of the Rebellion. B. A page from the History.

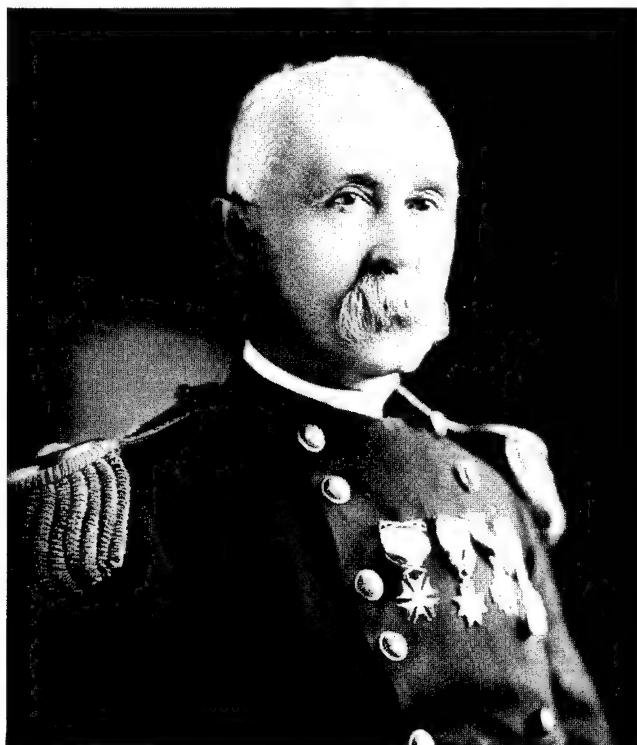


FIGURE 36.—Brig. Gen. George M. Sternberg, The Surgeon General of the Army for 9 years, 1893-1902, turned the thought of the Museum toward bacteriology.

The Surgeon General. The new Surgeon General was outstanding among American bacteriologists. Working independently, he had discovered the pneumococcus responsible for pneumonia in 1881, the same year in which, earlier, Louis Pasteur had described the same microorganism. In 1882, Sternberg had photographed for the first time the tubercle bacillus, discovered in the same year by Robert Koch. Ten years later, in 1892, he had published "A Manual of Bacteriology," the first American textbook on the subject. He came into the Office of the Surgeon General bearing the reputation of being the Army Medical Corps' first man in scientific attainment.

Within less than a month after taking office, the new Surgeon General secured authority of the War Department for the long-deferred Army Medical School set forth in General Orders No. 51, A.G.O., dated 24 June 1893. "By direction of the Secretary of War," the Orders read, "upon the recommendation of the Surgeon General of the Army, an Army Medical School will be established in the city of Washington for the purpose of instructing approved candi-

dates for admission to the Medical Corps of the Army in their duties as medical officers."

"The course of instruction will be for four months, and will be given annually at the Army Medical Museum, in Washington City, commencing on the 1st day of November."

As General Sternberg explained in his annual report for 1894, the new school, although affording "all the advantages that could be derived from one costing heavily for establishment and maintenance," would add nothing to the expense of the Army. Professors were selected from among the senior members of the corps stationed in or near the Capital, while the new Museum and Library building provided the necessary lecture rooms and "the accumulation of material for bacteriological and chemical study in the Army Medical Museum which furnished everything essential for laboratory work."

### *Walter Reed, Curator*

The Museum, indeed, furnished more than laboratory facilities and class rooms, for one of the most useful members of the faculty of the school was the newly appointed Curator of the Museum, Capt. Walter Reed (fig. 37), soon to become Major Reed, who took over the office on 8 September. The appointment was, in a sense, symbolic of the lessening of emphasis on the Civil War as the dominant theme of the Museum's activities. Born in Virginia in 1851, of North Carolina lineage, he was the first Curator of the Museum who had not served in the Union Army during the Civil War, and the first officer of Confederate antecedents to become Curator, serving under Maj. John Shaw Billings who continued to hold the post of Director of both the Museum and the Library.

Both Major Billings and Captain Reed were members of the faculty of the Army Medical School at its first session—Major Billings as professor of military hygiene, including practical instruction in the examination of air, water, food, and clothing from a sanitary point of view, and Captain Reed as professor of clinical and sanitary microscopy and director of the pathological laboratory.

Other members of the faculty were: Col. Charles H. Alden, Deputy Surgeon General and president of the faculty, who lectured on the military duties of medical officers, including property responsibility, examination of recruits, certificates of disability, reports, rights and privileges, customs of the service, and like topics; Lt. Col. William H. Forwood, attending surgeon at the Soldiers' Home, who was professor of military surgery, including care and transportation of the wounded; and Capt. Julian M. Cabell, instructor in Hospital Corps drill. In addition to the regular courses taught by the members of the faculty, there



FIGURE 37.—Maj. Walter Reed, fifth Curator of the Museum, 1893-1902.

were lectures on bacteriology by General Sternberg; on military law by Maj. G. B. Davis of the Judge Advocate's Office; on comparative anatomy by Capt. J. C. Merrill; on medical jurisprudence by Dr. Robert J. Fletcher of the Library; on parasites in man by Dr. C. W. Stiles of the Department of Agriculture; and

on head surgery by Dr. W. W. Keen, professor of surgery at the Jefferson Medical College and one of the most active surgeons of the Union Army in the Civil War.<sup>5</sup>

The first annual session of the school closed with appropriate exercises on 28 February 1894, attended by most of the officers of the War Department. The distinguished Prof. William Osler of the Johns Hopkins University addressed the graduating class of five assistant surgeons, as did Maj. Gen. John M. Schofield commanding the Army, briefly, and Colonel Alden more at length. The address of the President of the Faculty doubtless was directed more to the assembled spectators, which included ex-Surgeons General Hammond, Murray, and Sutherland, than it was to the graduating class. In his address, he outlined the many duties and responsibilities of the Army doctor which were outside the work of the physician and surgeon as ordinarily understood, and described the school's courses of study designed to fit the medical officer for these military duties. Referring to the work of the Department of Clinical and Sanitary Microscopy, the colonel said:

Perhaps it is proper to say here to our non-medical friends that the day when bacteria were a scientific curiosity and their study a pastime or fad has passed. The investigation of these microscopic organisms and their effects lies at the very foundation of modern medicine and surgery, and of advanced medical and surgical practice. In this direction lies today our strongest hope and brightest prospect of preventing and arresting disease.<sup>6</sup>

Thus there was launched, in quarters provided by the Army Medical Museum, and using facilities furnished by it, the school which was to grow and develop into the Medical Department Professional Service Schools in 1923 and, in 1947, into the Army Medical Department Research and Graduate School, with its own quarters and facilities in the Walter Reed Army Medical Center (fig. 38).

### *Problems With Space*

Even before the inauguration of the School in the Museum quarters, and, in fact, within a year of the occupation of the new building, the old question of lack of space and overcrowding had already been raised. In his annual report for 1888-89, Surgeon General John Moore said:

The question of space for the better accommodation of the present holdings of the Museum and for the additions which experience shows are to be expected, is already ob-

<sup>5</sup> Ashburn, P. M.: A History of the Medical Department of the United States Army. Boston: Houghton Mifflin Co., 1929, pp. 149, 150.

<sup>6</sup> (1) Army Medical School: Closing Exercises of the First Session. Journal of the American Medical Association 22: 352-354, 10 March 1894. (2) Ashburn, *op. cit.*, pp. 149, 150.

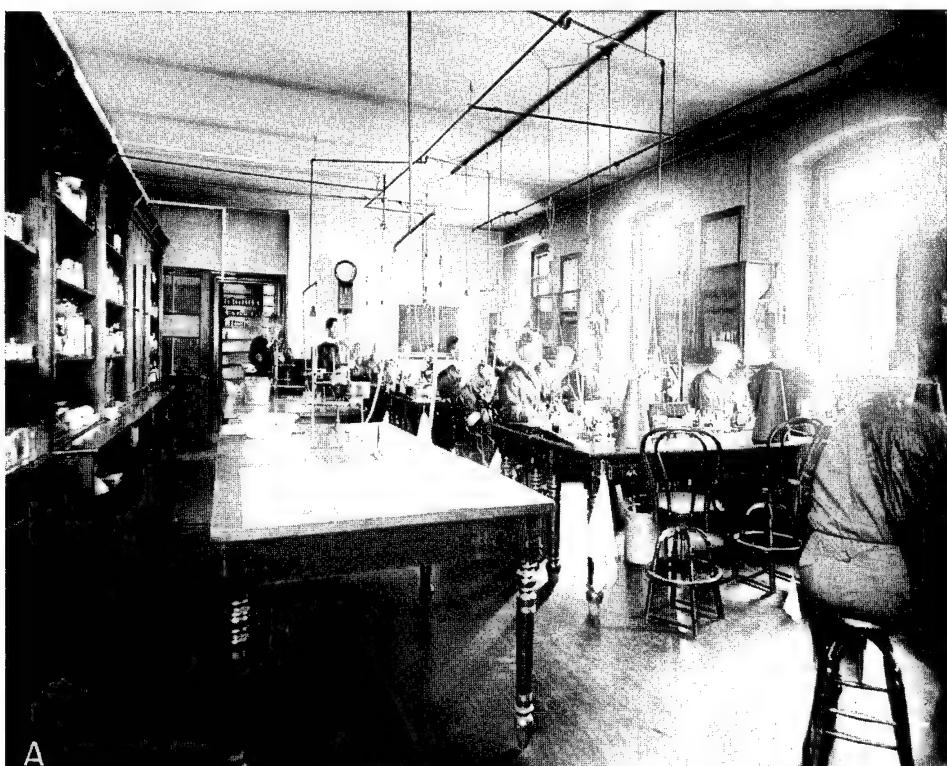


FIGURE 38.—Army Medical School laboratories, located in the Museum-Library building in the first decade of the 20th century. A. Bacteriological laboratory.

truding itself. Some special and valuable exhibits \* \* \* already suffer from insufficient or unsuitable presentation \* \* \*. In fact that is no avoiding the conclusion that the whole of the office rooms on the first floor \* \* \* now occupied by the Record and Pension Division should pass into my control for the use of the growing Library and Museum for which the whole building was originally constructed \* \* \*. I therefore earnestly recommend that provision be made elsewhere for the work of the Record and Pension Division of the War Department and that justice may be done to the intent for which this building was constructed.<sup>7</sup>

In the report for the next fiscal year, 1889-90, the recommendation is repeated with equal earnestness, and a like lack of success in securing the use of the entire building for Library and Museum purposes. In support of his request, The Surgeon General said, erroneously, that the building had been erected at a cost of only one-half of the estimates, resulting in a reduction in its dimensions and facilities.

<sup>7</sup> Lamb, Dr. D. S.: A History of the Army Medical Museum, 1862-1917, compiled from the Official Records. Mimeographed copy in historical records of AFIP, pp. 103, 104.



FIGURE 38.—Continued. B. Chemistry laboratory.

In the use of the building, unanticipated needs were encountered and had to be dealt with as part of the regular operation of the Museum. For example, on 28 August 1888, within a few months after occupation of the building, Dr. Billings found it necessary to ask for bids on the construction of a "cremating furnace," sufficiently powerful to consume the body of an animal of the size of a large Newfoundland dog without leaving obnoxious odors.<sup>8</sup>

Another lack of the building was a dependable source of electricity for the light necessary to carry on continuously photomicrographic work without having to depend upon the vagaries of the weather, and also for lighting the Library hall on the "rare occasions when it is necessary to use this room at night." One such occasion was the anticipated opening of the Museum at night during the meeting of the American Medical Association, which was held in Washington in the first week of May 1891. In a letter of 14 April to The Surgeon General,

<sup>8</sup> Circular Letter, J. S. Billings. On file in historical records of AFIP.

Dr. Billings asked authority to purchase, for not more than \$410, a dynamo to be driven by an 8-horsepower steam engine, already connected with the boilers, and urged action in time to have the lights working during the evenings when 1,500 members of the A.M.A. were expected to be in the city.<sup>9</sup>

Special and specific authority had to be sought from the Office of the Surgeon General for items of far less consequence than the dynamo needed to replace one which had been borrowed from the National Museum and had been recalled by its owner. "I have the honor to state that the following articles are required for use at the Army Medical Museum and request authority to buy them as emergency purchases to be paid for from the Museum appropriation: 5 gallons of Benzine, Estimated cost, \$.75" read a typical formal letter of the sort, duly signed by "Your obedient servant, John S. Billings, Major and Surgeon, U.S. Army, Curator Army Medical Museum." Other such letters request authority to purchase items as minute as 30 cents' worth of flour, 10 cents' worth of resin, and a half a dozen washers for a dime.<sup>10</sup>

The degree of financial stringency involved in operating the Museum on an annual appropriation of \$5,000—and that not always forthcoming without a struggle—is indicated by a letter of 30 December 1890 from Major Billings to M. Jules Talrich, Officier de l'Instruction Publique in Paris, from whom Billings had purchased some anatomical models during a visit to Paris, and who had offered others for sale.

I greatly appreciate your kind offer to let me have the two figures: "Une premiere attaque d'hysteric chez une jeune femme de la race caucasique" and "une jeune fille de Zouzouland," for the sum of \$4,000.00 but the means at my disposal will not allow me to purchase them. The yearly appropriation made by Congress for this Museum is very small, and after reserving the amount absolutely necessary for the current expenses of this Institution, there remains less than a thousand dollars available for the acquisition of new preparations and specimens.<sup>11</sup>

### *The Prime Source of Specimens*

How nearly complete was the reliance placed on contributions for specimens is shown by the pamphlet catalog of the Museum's portion of the Army Medical Department's exhibit at the World's Columbian Exposition in Chicago in 1892-93.<sup>12</sup> In its "Description of Selected Specimens," the pamphlet lists 82

<sup>9</sup> Letter Book, J. S. Billings, October 1890 to June 1891, pp. 360, 361. On file in historical records of AFIP.

<sup>10</sup> *Ibid.*, pp. 33, 200.

<sup>11</sup> *Ibid.*, p. 70.

<sup>12</sup> Pamphlet catalog, World's Columbian Exposition, Chicago, 1892-93. On file in historical records, AFIP.

medical and surgical specimens, contributed by 60 physicians and surgeons, with only three specimens identified as having been purchased.

In a foreword to the pamphlet, Dr. Billings described the purposes and collections of the Museum. Its primary object was, he said, to illustrate wounds and diseases of armies as a "step in the study of the best means of diminishing disease and mortality among soldiers," but it had soon been found necessary to extend the scope of the collection to include all forms of injuries and diseases, and also to form collections of means of transportation of the sick and wounded, of surgical instruments, and of instruments for diagnosis and research, including microscopes.

The Museum had, in 1892, a total of 29,486 specimens, including 3,439 of normal anatomy, 1,717 of comparative anatomy, 10,746 in the pathological section, 12,270 in the microscopical section, and 1,584 instruments and pieces of apparatus.

"Large as these numbers may appear," he said, "there yet remain many gaps in each series \* \* \*." And since Congressional appropriations left little margin for the acquisition of additional specimens, The Surgeon General appealed to all medical men to "aid, by contribution of specimens, an institution which is already of great value and interest, having an enviable reputation both in Europe and in this country, and which, it is believed, is destined to be of great importance in the advancement of medical science." Increasingly, he added, contributions were being received from practitioners in civil life, as the "facilities afforded by the Museum for the permanent preservation of pathological specimens, and of the records connected with them, are more and more appreciated"—a trend which Billings sought to strengthen by his earnest appeals for cooperation from all medical men, civilian as well as military.

The appeal for civilian cooperation was not a one-sided seeking of help without corresponding mutual benefits, for it had long been the settled policy and practice to open the facilities and collections of the Museum to qualified investigators and students—a policy which was made explicit by the passage of a joint resolution of the Congress, approved 12 April 1892, declaring it to be the policy of the Government to make available to students the facilities of the Army Medical Museum and other scientific and literary institutions in the Nation's Capital, as a measure for the promotion of research and the diffusion of knowledge.<sup>13</sup> While this action was in the nature of a ratification of existing policies and practices, it constituted congressional recognition of the scientific character of the Museum.

<sup>13</sup> 27 U.S. Statutes 395.

Recognition of the character of the institution by others was abundantly forthcoming. Thus, Dr. Henry W. Bettmann, Curator of the Cincinnati Hospital, wrote the Curator of the Army Medical Museum on 13 July 1895, seeking information as to the literature dealing with the best methods of preserving and mounting anatomical and pathological material, or a detailed account of the "methods employed in your own famous collections." Dr. Billings, who replied on 20 July, observed that the literature on the subject was "very limited, consisting principally of isolated hints scattered in various medical publications," but gave, in a nine-page memorandum, a "general summary" of the methods employed at the Museum which "after many futile experiments, have to some extent proved successful."<sup>14</sup>

The memorandum describes the steps in the process of cleaning, degreasing, and mounting bones showing disease or injury, and in even greater detail the processes of preparing wet specimens, preserved in ethyl alcohol or formalin. Special precautions were taken with specimens intended for microscopic or bacteriological work. For the latter, tissues were kept apart, handled as little as possible and with every care to prevent access of foreign bacteria.

### *Bacteriology and Roentgen Rays at the Museum*

With George Sternberg as Surgeon General and Walter Reed as Curator, bacteriology was bound to expand in importance in the world of the Museum, but the main emphasis of the laboratory work, if we may judge by the correspondence files of the period, continued to lie in the pathological examination of specimens sent in from Army posts and Indian agencies. Indeed, when the Health Officer of the District of Columbia asked Major Reed if he could conveniently make bacteriological examinations of specimens of water from public wells of which the health officer was suspicious, Major Reed was compelled to reply that "with every desire to assist" it would be impossible to "give you at present any material assistance," his own time and that of his assistants being "so completely taken up with the routine Museum work."<sup>15</sup>

Routine work of the Museum did not, however, keep Major Reed from taking a keen interest in medical developments. For instance, Wilhelm Roentgen's discovery of X-rays was announced to the world on 6 January 1896. Within 3 months, Reed had applied to The Surgeon General for authority to obtain apparatus for the purpose of experimenting with the new rays, and had been turned down on the ground that it was "not probable that any

<sup>14</sup> In correspondence files, AFIP.

<sup>15</sup> In correspondence files, AFIP, 30 January and 1 February 1895.

experiments you would find time to make would add anything of importance to our knowledge of these rays and their practical application in medicine \* \* \*. Later, when the exact practical value of photography by these rays has been determined, we may want the necessary apparatus in order to assist in the diagnosis of cases occurring in the District, to which the new method may be applicable.”<sup>16</sup>

That the Museum got its apparatus within 3 months after being turned down, is indicated by a letter of Dr. Joseph S. Wall of Washington, in which he describes an early clinical use of the X-ray. On 10 June 1896, as Dr. Wall recalls, and as the admission records of the Garfield Hospital showed, “a girl of seventeen was admitted to the hospital because of a .22 calibre penetrating gunshot wound of the hip, accidentally inflicted by her brother.” It became the duty of Dr. Wall, as a young “externe” of the hospital, “to accompany the patient in a horse-drawn ambulance to the Army Medical Museum to obtain the services of Dr. William Gray,” who had been engaged in microscopic and bacteriologic work for the Museum since 1884, and who, Dr. Wall said, had the only Roentgen tube in Washington at that early date (fig. 39). “After the orderly-driver and myself had struggled up four flights of stairs to Dr. Gray’s laboratory,” he continued, “carrying a rather plump young lady on the stretcher, she was exposed to the X-ray for a period of one hour in order to secure a picture showing the location of the bullet.” A satisfactory plate was secured, “even though the tube was activated by a kind of static grindstone,” the girl was taken back to the hospital, and the bullet was successfully extracted.<sup>17</sup>

### *Services of Dr. Billings*

Midway in the closing decade of the 19th century, in 1895, Dr. John Shaw Billings retired from the Army, after 34 years of service, of which 30 years had been spent in building up the Library, with 12 years of concurrent service to the Museum. Dr. Billings, a mighty man of medicine, went on to a postretirement career of rare distinction. From the University of Pennsylvania, where he occupied a chair in the medical school for a year after retirement from the

<sup>16</sup> (1) Castiglioni, Arturo: *A History of Medicine*. Translated from the Italian and edited by E. B. Krumbhaar, 2d ed. New York: Alfred A. Knopf, Inc., 1947, p. 1065. (2) Letter, George Sternberg to Walter Reed, 6 March 1896.

<sup>17</sup> Letter, Dr. Joseph S. Wall to R. A. Sloan, Army Medical Museum, 13 January 1950. From a story in the Washington *Times Herald*, 6 October 1954, it appears that there was an earlier use of the X-ray, in the District of Columbia, to locate a bullet accidentally fired into the hand of Carl A. Loeffler, as reported in the Washington *Post*, 24 April 1896.

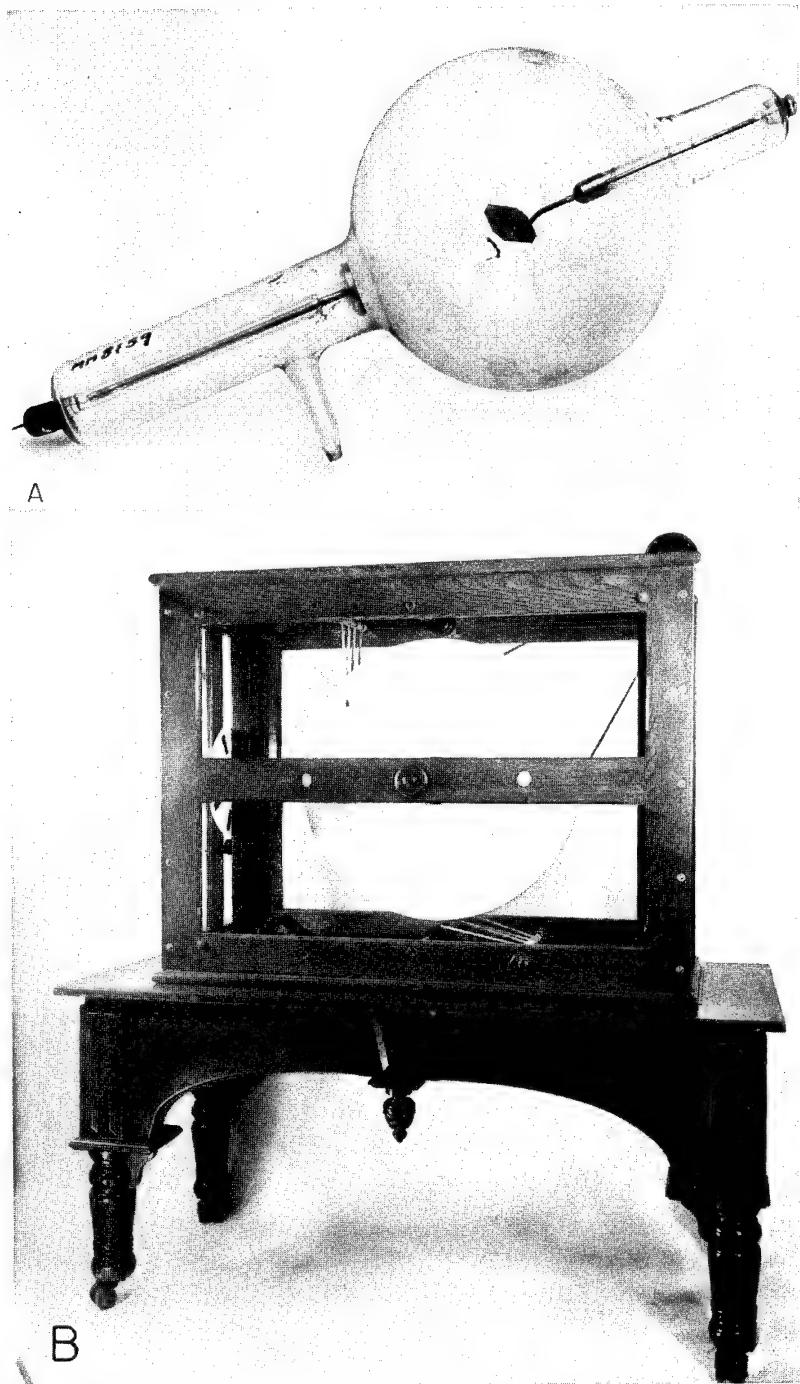


FIGURE 39.—Early X-ray apparatus at the Medical Museum. A. Roentgen ray tube. B. Static electric apparatus.

Army, he was called to New York where he worked out the consolidation of the Astor, the Lenox, and the Tilden Libraries to form the great New York Public Library, of which he became the first director, heading not only the main library, housed in a building erected in accordance with his ideas, but also the whole library system with some 80 branches in Greater New York.<sup>18</sup>

Among Dr. Billings' last official services to the Museum was his initiation of a movement to have the dental profession adopt the Museum as a repository for study materials in the field of dentistry (fig. 40), "just as other sections of the Museum and Library are considered to be their national collections by the physicians, surgeons, and specialists of the country," as Dr. Billings wrote Dr. Williams Donnally, D.D.S., of Washington, on 10 December 1894. The suggestion bore fruit when, in 1895, the American Dental Association accepted the suggestion when offered by Dr. Donnally. This action, the first such formal acceptance of the Museum as a national repository, may be regarded as a step toward the system of national registries of pathological materials and case histories of the various specialized medical groups which is such an important factor of today's Armed Forces Institute of Pathology.<sup>19</sup>

### *Animal Experimentation at the Museum*

Upon the retirement of Lieutenant Colonel Billings, Col. David L. Huntington, Deputy Surgeon General, was placed in charge of the Museum and Library Division, with Major Reed continuing as Curator of the Museum. As Curator, he was called upon to deal with charges of unnecessary cruelty to animals, said to have taken place in the Museum some years earlier. These charges were contained in a letter from Dr. L. E. Rauterberg to the Senate Committee on the District of Columbia, in connection with an investigation of the practice of vivisection in the District. Dr. Rauterberg wrote:

It was my lot for a number of years to be engaged in the Microscopical Division of the Army Medical Museum, and I saw practiced the most inhuman and barbarous mutilations of the dumb animal, under the supervision and with the sanction of the United States officers in charge. A desired part or section of the animal would be removed, not under anesthesia, and the poor beast would be then placed back in its cage or vessel until it suited the convenience of the operator to help himself to another portion, so long as the animal

<sup>18</sup> Who Was Who in America, 1943 edition, "Billings, John Shaw."

<sup>19</sup> Lamb, *op. cit.*, pp. 109-111. The invitation extended by Dr. Billings through Dr. Donnally was published in *Dental Cosmos*, June 1895, p. 519. Dr. Donnally's eloquent and persuasive presentation of the reasons for acceptance of the invitation appears in the Transactions of the American Dental Association, 1895, pp. 134-149.



FIGURE 40.—Changes in the concepts of dentistry since the time when this type of equipment was familiar have been quite as profound as the change in the equipment and instruments used.

would survive these tortures. I have thus seen animals with eyes, section of brain and other parts removed, and kept in reserve for future experiments for a number of days, and all for the verification and repetition of results obtained and published years ago.

Since the practices alleged were ascribed to a time before he became Curator, Dr. Reed asked Dr. J. C. McConnell, who had been connected with the Museum

from about 1870 to the end of 1895, about the truth of the charges. Dr. McConnell replied on 8 June 1896, "That a very wonderfully distorted, inaccurate and false description has been given of work conducted at the Army Medical Museum some twenty years ago." He continued:

Those who were practically engaged in the Microscopical Division should know better than anyone else the character of the work that was performed, and that all animals experimented upon were under the influence of an anesthetic. One who was not in any manner connected with the Microscopical Division of the Museum, as was the case with Dr. L. E. Rauterberg, could draw upon his imagination very satisfactorily, and write a vivid description of what might have been done with animals, the remains of which he saw under alcohol in specimen jars. I, however, testify that at no time during my connection with the Army Medical Museum, from about 1870 to the end of the year 1895, have any experiments been performed upon animals in which an anesthetic was not used, unless some of the ordinary inoculation experiments, which are practically painless, nor were animals kept in a mutilated condition.<sup>20</sup>

Dr. Reed did not appear before the Senate Committee, that function being performed for the Army by General Sternberg, who vigorously opposed passage of the bill which, in the opinion of most doctors, would have so restricted animal experimentation as to have the practical effect of prohibiting the use of this avenue to increased medical knowledge. Dr. Reed did, however, appear in opposition to the bill at a preliminary hearing before the commissioners of the District of Columbia, as is mentioned in an account in the *Washington Post* of 10 February, and reproduced in the transcript of the Senate Committee hearings.

### *The Spanish-American War*

The major military event of the nineties, the war with Spain, seemed at first to have passed the Museum by. Col. Dallas Bache, who had been appointed Director of the Museum and Library Division on 31 January 1898, as the war clouds were thickening, made a report to Surgeon General Sternberg on 17 October, after the brief war had been fought and won, in which he said:

The contributions to this Museum from the active theatre of the recent war with Spain and from the extensive field of subsidiary operations, have been so few and unimportant that it seems desirable to renew the attention of Medical Officers to this important subject. The hurry and peculiar military conditions of the Santiago campaign, and the amount of work imposed upon Medical Officers in our large camps of instruction would naturally obscure the more remote interests of the Museum; but from our large General Hospitals and Hospital Ships, and the more deliberate methods of our forces of occupation may well be demanded a return to the systematic collection of specimens illustrating the

<sup>20</sup> Senate Report 1049, to accompany S. 1552, 54th Congress, 1st session, 26 May 1896.

bone and tissue injuries produced by modern firearms and explosives, and a careful preservation of such illustrations of disease as may be obtained upon cadaveric examination.

Colonel Bache's observations, with accompanying renewed directions as to methods of preparation and preservation of specimens and their delivery to the Museum, were published to the Medical Corps in the Surgeon General's Circular No. 10, 20 October 1898;<sup>21</sup> with what response does not appear. But the Spanish-American War, with its record of nearly seven times as many deaths from disease as from enemy bullets, with more than half the deaths from disease from one cause, typhoid fever, and with the specter of yellow fever lurking in the background, sounded a challenge to the best brains and the most devoted dedication to medical advancement.

The history of the Spanish-American War was, in a way, a repetition of that of the Civil War, in that a Medical Department, barely adequate for peacetime and actually forbidden by law to store up reserve supplies, was suddenly called upon to care for a tenfold increase in army numbers. Moreover, General Sternberg had been denied his request for allotment of a reasonable share of the emergency funds voted for defense purposes before the start of actual hostilities, and so was not permitted to anticipate his increased needs before the flood of raw volunteer troops fell upon his slender medical resources.

Typhoid soon became epidemic in nearly nine out of ten of the new regiments, and about one soldier in five contracted the disease. The reasons ascribed for these epidemics were numerous but, in the language of Col. P. M. Ashburn, "fundamentally they are one, ignorance."<sup>22</sup> To the task of dispelling the prevailing ignorance of the transmission of typhoid, and the equally unknown method of transmission of yellow fever, and so to make a beginning in the control of two of the major diseases of man, the Army Medical Museum was called.

<sup>21</sup> (1) Lamb, *op. cit.*, pp. 112, 113. (2) Lamb, D. S.: Army Medical Museum, Washington, D.C. The Military Surgeon 53: 131, 132, August 1923.

<sup>22</sup> (1) War Department Records, Office of the Surgeon General. On file in National Archives. (2) Ashburn, *op. cit.*, p. 169.

## CHAPTER VI

# The Walter Reed Chapter

In three tremendous years of achievement, from 1898 to the end of 1900, Maj. Walter Reed, Curator of the Army Medical Museum, and professor in the Army Medical School, wrote imperishable pages in the history of medicine.

First, as president of an Army Board of medical officers set up to investigate the typhoid fever epidemic in the camps within the United States, he helped to broaden the understanding of the ways in which typhoid spreads—an essential step in the triumph of the next decade over that disease, to be dealt with in a subsequent chapter of this story.

And then, after the field work of the Typhoid Board was completed but before its report was compiled and published, Reed was called upon to head another board of medical officers to investigate infectious diseases in Cuba, which was to discover, and prove beyond a doubt, the method of transmission of the most dreaded disease of the Tropics—yellow fever.

### *Yellow Fever Epidemics*

Yellow fever, indeed, was more than a tropical disease. Endemic in the American tropics, it had an unaccountable and disconcerting way of breaking out in epidemic form in the cities and villages of the Temperate Zone of North America. In at least 35 years of the 18th century, yellow fever invaded the United States, extending as far north as Nantucket Island, where 259 persons died of it in 1763, and New York, where there were 2,300 deaths in 1798, and raching a climax of destructiveness in 1793, with 4,041 deaths in 6 weeks among the 40,144 inhabitants of Philadelphia, then the Capital City of the Nation.

The 19th century was even worse, with invasions in at least 77 years, rising upon occasion to great epidemics such as those of 1853, which took 7,848 lives in New Orleans; of 1855, with 2,670 deaths in New Orleans and 2,000 in Norfolk; of 1878, when 4,046 died in New Orleans and 5,150 in Memphis; and as many more in smaller and scattered communities in the Mississippi Valley.

Altogether, in the years since 1793, New Orleans had suffered more than 40,000 deaths, Philadelphia more than 10,000, Memphis more than 7,500, Charleston more than 4,500, and New York almost 3,500, while the total for the United States exceeded 100,000 deaths.<sup>1</sup>

Perhaps worse than the sickness, which attacked from three to five persons for every one who died of the disease, and certainly worse than the economic disruption, was the sheer terror of the deadly infection which struck no one knew how and against which no precautions, no defenses, seemed to avail.

Writing of the Philadelphia epidemic of 1793, eyewitness Mathew Carey says in his "Short Account of the Malignant Fever Lately Prevalent in Philadelphia," that the "consternation of the people \* \* \* was carried beyond all bounds. Dismay and affright were in the countenance of almost every person." Flight from the city was sought by many, including some of the representatives of the Federal government while "of those who remained many shut themselves in their houses and were afraid to walk the streets \* \* \*."

The "marks of terror" seen on every hand included burial of "the corpses of the most respectable citizens, even those who did not die of the epidemic \* \* \* unattended by a friend or relative, and without any sort of ceremony." Pedestrians kept to the middle of the streets "to avoid being infected in passing by houses wherein people had died." The custom of shaking hands was discontinued, and it became common practice to try to keep to the windward of persons met abroad in the streets.<sup>2</sup>

Nearly a century later, when the great epidemic of 1878 struck the Mississippi Valley, causing a loss of 16,000 lives, J. M. Keating, who lived through them, wrote of the scenes in Memphis. "Men, women and children," he said, "poured out of the city by every avenue of escape \* \* \* by every possible conveyance—by hacks, by carriages, buggies, wagons, furniture vans, and street-drays; by bateaux, by anything that could float on the river; and by the railroads \* \* \*. The aisles of the cars were filled and the platforms packed \* \* \*. The ordinary courtesies of life were ignored, politeness gave way to selfishness, and the desire for personal safety broke through all social amenities."

<sup>1</sup> (1) Yellow Fever: A Symposium in Commemoration of Carlos Juan Finlay. The Jefferson Medical College of Philadelphia, 22–23 September 1955, pp. 4, 5. [Hereinafter cited as Symposium.] (2) Kelly, Howard A.: Walter Reed and Yellow Fever, 2d edition. Baltimore: Medical Standard Book Co., 1906, pp. 83, 84, 204, 210, 221, 233, 238. (3) Reed, W., and Carroll, J.: The Prevention of Yellow Fever, Medical Record (New York) 60: 641, 26 October 1901.

<sup>2</sup> Carey, Mathew: A Short Account of the Malignant Fever Lately Prevalent in Philadelphia, Philadelphia, 1793, quoted in Kelly, *op. cit.*, pp. 212–215.

Twenty-five thousand persons, half the population, left the city and 5,000 more went into camp to escape the city's streets where "trade and traffic were suspended" and "death was everywhere triumphant."

The terror of the time was heightened by the fact that "neither cleanliness nor right living were a shield to stay the hand of the destroyer. He invaded the homes of the most chaste and the den of the vilest. He took innocence and infamy at the same moment and spread terror everywhere. Where sorrow was so general there could be no parade of it. There were no funerals and but little demand for funeral services \* \* \*. Not infrequently bodies were left in the cemetery unburied for a night, so hard pressed were the managers for labor, and so numerous were the demands upon what they had \* \* \*."<sup>3</sup>

For every act of depravity or inhumanity there were, doubtless, deeds of devotion and unselfishness, but the overall effect of an epidemic attack of yellow fever—and any outbreak might develop into epidemic proportions—was the utter demoralization of community life. The threat that hung over the cities and villages of the United States was ample warrant for the creation of a special commission to visit the West Indies and study yellow jack in its home haunts.

Such a commission was formed in 1879, with Maj. George M. Sternberg, a future Surgeon General of the Army, as secretary. After 6 months' study in Cuba and Brazil, the Commission reported, on 16 November 1879, that "yellow fever is an epidemic, transmissible disease and the agent capable of transmitting the disease must be in the air."<sup>4</sup>

### *Studies on Transmission*

The suggestion of an airborne agency of transmission of the disease found lodgment in the mind of Dr. Carlos Juan Finlay of Havana (fig. 41). Dr. Finlay was Cuban-born, of Scottish and French parentage, educated in France and Germany, a graduate of the Jefferson Medical College of Philadelphia, fluent in four languages, a student of the classics, and a man of scientific attainments. He was first connected with the study of yellow fever when he was named, by the Spanish Governor General of Cuba, to work with the United States Commission of 1879 on the subject. The most meaningful consequence of the work of that commission, as it turned out, was the idea implanted in the mind of its Cuban collaborator.

<sup>3</sup> Keating, J. M.: History of the Yellow Fever Epidemic of 1878 in Memphis, Tenn., quoted in Kelly, *op. cit.*, pp. 223-228.

<sup>4</sup> Symposium, p. 5.

On 14 August 1881, Dr. Finlay read before the Royal Academy of Medico-Physical and Natural Sciences in Havana a paper entitled "The Mosquito Hypothetically Considered as the Agent in the Transmission of Yellow Fever." This was not the first suggestion of the possibility of the mosquito as a carrier of yellow fever—Dr. Josiah Clarke Nott, of Mobile, Ala., had speculated upon the possibility as early as 1848—but Dr. Finlay was the first to go beyond speculation to the working out of a definite theory of the method of transmission, based upon experiments with a particular species of mosquito, then called *Culex fasciatus*, later known as *Stegomyia fasciata*, and now classified as *Aedes aegypti*.

Dr. Finlay's theory was not ignored—he was too respected a figure for that—but it met with almost universal disbelief, and even encountered ridicule as the theory of "that crazy Cuban doctor." For this, there were more than the usual reasons for nonacceptance of a new idea. Perhaps the most potent reason of all was the lack of positive proofs resulting from Dr. Finlay's own continued experiments in which he was never able to produce a clear-cut and undoubted case of experimental yellow fever from the bite of a mosquito.<sup>5</sup>

In the very spirit of the time, there were reasons why the Finlay mosquito theory did not receive the attention it merited. It was propounded in a period when bacteriology, in the first flush of widespread acceptance of its basic premise, was announcing with almost breathtaking frequency discoveries of new bacteria as the specific causes of particular diseases—tuberculosis among them, and tetanus, pneumonia, typhoid fever, anthrax, and diphtheria, to name a few of the scourges for which a disease-causing microorganism was found.

Naturally, the eyes of the scientific world were focused on the minute organisms which were being made visible by improved instruments and procedures, and inevitably, bacteriologists saw organisms which were taken to be the cause of yellow fever. Such "discoveries" were announced in Brazil, Mexico, and Cuba during the 1880's but further investigation by Dr. Sternberg, outstanding among American authorities on the subject, demonstrated in each instance that the supposed causative agent was not, in fact, related to yellow fever. The specific agent of the disease, according to Sternberg's report, in 1890, of his investigations carried on in Havana, Vera Cruz, and Rio de Janeiro, had not been discovered and demonstrated.

There matters stood until, in 1897, Dr. Giuseppe Sanarelli, an Italian bacteriologist of the University of Bologna, who had worked in Montevideo

<sup>5</sup> (1) Symposium, pp. 96-101. Dr. Nott's suggestion as to mosquitoes was published in the New Orleans Medical Journal, volume IV, pp. 563 ff., under the title "Yellow Fever Contrasted with Bilious Fever: probably insect or animalcular origin." Dr. Finlay's theory first appeared in the Annales de la Real Academia, volume LVIII, pp. 147-169.



FIGURE 41.—Dr. Carlos Juan Finlay, whose theory of transmission of yellow fever by the bite of mosquitoes was tested and proved by Walter Reed.

and Rio de Janeiro, announced his discovery of the cause of yellow fever as an organism which he called *Bacillus icteroides*.

The announcement created great interest in America, where studies were promptly undertaken to check and, if possible, to confirm the reported finding. One such investigation, ordered by Surgeon General Walter W. Wyman of the Marine Hospital Service—now the United States Public Health Service—resulted in a report, in 1899, which accepted Dr. Sanarelli's claim in the fullest.<sup>6</sup>

Sternberg, by this time Surgeon General of the Army, assigned the task of checking the Sanarelli discovery to two members of the staff of the Army Medical Museum—Walter Reed and James Carroll—who performed the work in the laboratories of the Museum. In a "Preliminary Report," published in the *Medical News* of 29 April 1899, they reported that the Sanarelli bacillus was apparently a strain of the bacillus of hog cholera rather than a cause of yellow

<sup>6</sup> Reed, Walter: The Propagation of Yellow Fever: Observations Based on Recent Researches. (An address given before the 103d Annual Meeting of the Medical and Chirurgical Faculty of the State of Maryland, held in Baltimore, 24-27 April 1901.) Published in the *Medical Record* (New York) 60: 201-209, 10 August 1901. [Hereinafter cited as Baltimore Address.]

fever. Dr. Sanarelli hotly resented the Reed-Carroll findings in a communication in the *Medical News* of 12 August, in which he charged his "obstinate opponents" with "hiatuses of observation and inexactness in \* \* \* experiment," leading to "gross and inexcusable error." Reed and Carroll made reply in the same journal of 9 September, refuting the charges and outlining the careful procedures of the respected laboratories of the Museum.<sup>7</sup>

By 1899, the subject of yellow fever was of all the more pressing interest because on 1 January of that year the American Forces had formally taken over from Spain the occupation of Havana, a city which had not been entirely free of the pestilence for 140 years. Yellow fever, feeding on the non-immune personnel of the occupation forces, again broke out in epidemic form, in 1900. The opportunity and the need for a fresh, thorough, and searching investigation of the source and the spread of yellow fever had come together—and the Army, fortunately, had the men who could make the most of the opportunity and could meet the need.

### *The Yellow Fever Board at Work*

The Surgeon General again turned to Major Reed, who had so ably directed the investigations of the Typhoid Board, and to James Carroll, his second in command at the Army Medical Museum, who had participated in the investigation of the Sanarelli bacillus. These two, with Dr. Jesse W. Lazear and Dr. Aristides Agramonte, were designated as a board to investigate infectious diseases in Cuba, set up by War Department Special Orders No. 22, 24 May 1900. All four members of the Board were happy, one might say almost inspired, choices.

Walter Reed was born on 13 September 1851, in Gloucester County, Va.,<sup>8</sup> where his father was a Methodist minister, and was reared in Farmville, Va., and Charlottesville, seat of the University of Virginia. After a year at the University in the study of the classics, Reed, compelled by slender family finances to curtail his education, managed to compress the 2-year course in medicine into 1 year, graduating third in his class before his 18th birthday. A year later, in 1870, he received a second M.D. degree from the Bellevue Hospital Medical College in New York. After 5 years as a hospital intern and a health department inspector in Brooklyn, he took the examinations for the Medical Department of the Army, partly because he wished to ask Miss Emilie Lawrence

<sup>7</sup> *Medical News*, Philadelphia, 74: 513-514, 29 April 1899; 75: 193-199, 12 August 1899; 75: 321-329, 9 September 1899.

<sup>8</sup> A piece of one of the original logs of which the house at "Belroi," where Walter Reed was born, was constructed, is exhibited at the Medical Museum, AFIP.

of Murfreesboro, N.C., to marry him and felt that the prospects of establishing a sufficiently assured private practice, which he said depended "more on his beard than on his brains," were not sufficiently promising to sustain the venture. He succeeded in passing the examinations, was commissioned a first lieutenant, and won his bride.

There followed 4 years of frontier service in Arizona, and a year at Fort McHenry, Baltimore, where he took advantage of the opportunity to study physiology at Johns Hopkins. The next 5 years were spent in Nebraska, after which he had a tour of 2 years at Mount Vernon Barracks in Alabama. In 1889, Reed was back in Baltimore as attending surgeon and examiner of recruits, with permission of Surgeon General Jedediah H. Baxter to pursue such courses at Hopkins as would be of practical benefit to any army surgeon, but not to take laboratory courses. After General Baxter's death, Captain Reed was permitted to take courses in pathology and bacteriology—subjects which were to determine the direction of his future career.

After 2 years more of frontier service in the Dakotas, Reed was named to the positions in the Medical Museum and the School which he held at the time of his appointment to investigate yellow fever—the appointment which he was to make of such shining service to medicine and mankind.<sup>9</sup>

James Carroll (fig. 42) was born in England in 1854, emigrated to Canada at the age of 15, and enlisted in the U.S. Army in 1874 at the age of 20. Twelve years later, he took advantage of a tour of duty in New York to begin his medical education, which he finished with the degree of M.D. from the University of Maryland, earned while stationed in Baltimore in 1891. Postgraduate work in bacteriology and pathology at the Johns Hopkins Hospital followed, in 1892 and 1893. In the latter year, he was assigned to the Museum, where he served with the rank of Hospital Steward until 1898, when he became Acting Assistant Surgeon.<sup>10</sup>

Jesse William Lazear (fig. 43), the third member of the Yellow Fever Board, was born in 1866 in Baltimore, where he graduated in academic studies

<sup>9</sup> Reed's career up to the time of the creation of the Yellow Fever Board is based on Kelly, *op. cit.*, chapters I, II, and III, and upon Maj. Jefferson Randolph Kean's memoir, included in Senate Document 822, 61st Congress, 3d session, 1911, pp. 14-16 and 38-40. Major Kean refers in these memoirs to a little Indian girl who had been so badly burned in a campfire that she had been abandoned to die by her people, but whom Dr. Reed had rescued and saved, taking her into his home for rearing. The story is told in greater detail in an account of an interview, with Miss Blossom Reed, the major's daughter, at her home at Blue Ridge Summit, Pa., on the 109th anniversary of his birthday, which appeared in the Washington *Daily News* of 14 September 1960.

<sup>10</sup> (1) Kelly, *op. cit.*, pp. 262, 263. (2) Lamb, D. S.: A History of the Army Medical Museum, 1862-1917, compiled from the Official Records. Mimeographed copy in historical records of AFIP, p. 114.



FIGURE 42.—Lt. James Carroll, a member of the Yellow Fever Board, who contracted the disease in its experiments, became sixth Curator of the Army Medical Museum, 1902-1907.

at the Johns Hopkins University in 1889. He took his medical degree at Columbia University in 1892, served at the Bellevue Hospital in New York for 2 years, and studied in Europe for a year, including time in Italy and a period at the Pasteur Institute in Paris. Back in the United States, he became bacteriologist on the staff of the Johns Hopkins University and assistant in clinical microscopy in the medical school, until he was selected by the Surgeon General's Office to go to Cuba as a bacteriologist at Camp Columbia, where he arrived in February 1900.<sup>11</sup>

Aristides Agramonte (fig. 44), the youngest member of the Board and the only member who was an "immune" to the disease which was to be investigated, was born in Puerto Principe, Cuba, in 1868, the son of a Cuban patriot

<sup>11</sup> (1) Kelly, *op. cit.*, pp. 281-283. (2) Truby, Albert E.: Memoir of Walter Reed: The Yellow Fever Episode. New York: Paul B. Hoeber, Inc., 1943, pp. 61, 73, 82.



FIGURE 43.—Dr. Jesse W. Lazear, a member of the Yellow Fever Board, who lost his life in its experiments.

insurgent against the rule of Spain. After the death of General Agramonte in battle, in 1872, the family moved to New York, where Aristides graduated from the College of the City of New York and received his M.D. in 1890, at the College of Physicians and Surgeons of Columbia University. In May 1898, at the outbreak of the war with Spain, he was appointed acting assistant surgeon in the U.S. Army, and participated in the Santiago campaign of that summer. At the time of his appointment to the Yellow Fever Board, he was in Havana, making bacteriologic studies of yellow fever cases.<sup>12</sup>

Major Reed was acquainted with all three of the other members of the new Board. Carroll was his close associate at the Museum, Lazear he knew through their connections with the Johns Hopkins school, and Agramonte had done work in the laboratories of the Museum. When appointed, Doctors Lazear and Agramonte were already at work on yellow fever in Cuba, where Reed had renewed his acquaintance with them in the early spring of 1900,

<sup>12</sup> Kelly, *op. cit.*, pp. 288-290.



FIGURE 44.—Dr. Aristides Agramonte, Cuban member of the Yellow Fever Board, was its only "Immune."

when he was there investigating the germicidal qualities of an "electronzone" product being offered to the Army. The personalities and capabilities of the Board which was to be created in late May were well known to its president.<sup>13</sup>

The senior members of the Board, Reed and Carroll, arrived in Havana on 25 June 1900, and work was undertaken immediately. Headquarters was established at Columbia Barracks in the suburban village of Quemados de Marianao, 6 miles west of Havana. Quemados, as it happened, was in the grip of an outbreak of yellow fever, with 50 cases and 12 deaths, despite an almost ideal situation from the standpoint of general sanitation.

The first work undertaken was a further investigation of the Sanarelli bacillus, making use of the wealth of yellow fever materials available in Cuba. Blood drawn from 18 yellow fever patients and autopsies performed on 11 who

<sup>13</sup> (1) Truby, *op. cit.*, pp. 73-77. (2) Lamb, *op. cit.*, p. 118. (3) Senate Document 822, 61st Congress, 3d session, p. 26 (Dr. Agramonte's statement).

had died of the disease yielded no trace of the organism so, quite early in the investigation, the Sanarelli theory as to the cause of the disease was discarded.<sup>14</sup>

Reed, in fact, was to be criticized, in the clear light of knowledge after the fact, for the time spent on disproving the Sanarelli theory. With the unsolved problem before him, however, and especially with the knowledge that the Marine Hospital Service accepted Sanarelli's claims, it is hard to see how Reed could have done otherwise than make the most thorough test possible of all approaches to the mystery of the cause and propagation of yellow fever.

At any rate, little time was lost, for even while the cultures were being tested and the autopsies performed, preparations went ahead for trying other approaches. The "search for the specific agent of yellow fever," in Dr. Reed's words, was not to be abandoned but was "to be given secondary consideration, until we had first definitely learned something about the way or ways in which the disease was propagated from the sick to the well." It was regarded "as of the highest importance that the agency of an intermediate host, such as the mosquito, should either be proven or disproven."<sup>15</sup>

Reed's attention had been drawn to the possibility of the mosquito as a transmitter of disease by the then recent work of Ronald Ross, of the British Indian Medical Service, in demonstrating that the *Anopheles* mosquito carried the plasmodium causing malaria between birds, while Sir Patrick Manson demonstrated that the bite of an infected mosquito could cause malaria in man. To the "brilliant work of Ross and the Italian observers"—Grassi, Bastianelli, Bignani, and others—Reed expressed his indebtedness.<sup>16</sup>

Coming closer to the problem of an intermediate host for the cause of yellow fever, Dr. Reed was impressed by the observations of Surgeon Henry Rose Carter of the Marine Hospital Service, made during an outbreak of yellow fever in Mississippi in 1898 and published in the *New Orleans Medical Journal*

<sup>14</sup> Reed, W., Carroll, J., Agramonte, A., and Lazear, J. W.: The Etiology of Yellow Fever. A Preliminary Note. *Philadelphia Medical Journal* 6: 790-796, 27 October 1900.

<sup>15</sup> Baltimore Address, p. 203.

<sup>16</sup> (1) Reed et al., *Philadelphia Medical Journal*, 6 (1900), p. 791. (2) Reed, W.: Recent Researches Concerning the Etiology, Propagation and Prevention of Yellow Fever, by the United States Army Commission. *Journal of Hygiene* 2: 107, April 1902. Ross had demonstrated the role of the mosquito as the intermediate host to the plasmodium of malaria in 1897. The year before, 1896, Major Reed had reported to The Surgeon General upon a malaria epidemic at Washington Barracks (now Fort Lesley J. McNair) and Fort Myer, Va. By careful epidemiological investigation, he had ruled out the possibility of drinking water as a cause and concluded that the fevers were due to "emanations from the Potomac flats." As Col. Hugh R. Gilmore, Jr., Curator of the Medical Museum, put it, Reed "correctly implicated airborne emanations—but the 'emanations' had wings!" In Gilmore, H. R., Jr.: Malaria at Washington Barracks and Fort Myer: Survey by Walter Reed. *Bulletin of the History of Medicine* 29: 346-351 (July-August) 1955.

in May 1900. These observations showed that between the occurrence of the first cases at isolated farmhouses and of the first succeeding groups of cases at the same houses there was a lapse of 2 or 3 weeks, while subsequent cases developed in a shorter period of incubation of from 1 to 7 days. To Dr. Carter, this indicated that there was in a life cycle of the infecting organism an intermediate host, such as the mosquito, which harbored the cause of the disease for a period before passing it on.<sup>17</sup>

To the work of Ross and of Carter, Reed added a perspicacious observation of his own at Pinar del Rio, 100 miles west of Havana, where yellow fever broke out in the American garrison. One of the victims was a general prisoner, under confinement in the guardhouse since 6 June 1900, who fell sick on 12 July and died on the 18th, and was autopsied by Dr. Agramonte on the 19th. The fact that this guardhouse prisoner, effectively in quarantine insofar as yellow fever exposure by ordinary means was concerned, should sicken and die of yellow fever, led to the conjecture "that, perhaps, some insect capable of conveying the infection, such as the mosquito, had entered through the cell window, bitten this particular prisoner, and then passed out again." This, Dr. Reed added, was only a supposition, but it was a supposition no doubt strengthened by the reflection that iron bars at the windows and armed guards at the door could keep the prisoner from visiting places of infection, but would not keep infected mosquitoes from visiting the prisoner.<sup>18</sup>

### *Dr. Finlay's Mosquito Theory*

And then there was Dr. Finlay and his long-held mosquito theory which he had "ingeniously discussed," as Reed put it, as early as 1881 and had repeated since, notably in papers published in 1891, 1894, 1895, and as recently as 1899. Although the Cuban doctor had "no results in support of his theory" Reed wrote, " \* \* \* the argument in favor of an intermediate host seemed so strong \* \* \* that investigation along this line was determined upon."<sup>19</sup>

Already, around the 1st of July, members of the Yellow Fever Board had called upon Dr. Finlay and had received his most cordial cooperation, for which Reed expressed "sincere thanks." The doctor turned over larvae and eggs of the suspected species of mosquito, which became the foundation of the breeding stock used in the experiments. Dr. Lazear, who had had entomologic training and experience with mosquitoes in Italy, was placed in charge of the work of

<sup>17</sup> Reed et al., *Philadelphia Medical Journal*, 6 (1900), pp. 791, 792.

<sup>18</sup> Baltimore Address, pp. 202, 203.

<sup>19</sup> Reed et al., *Philadelphia Medical Journal*, 6 (1900), p. 792.

breeding, rearing, and caring for Dr. Finlay's mosquitoes and those obtained from other sources. Hospital Steward John S. Neate, of the staff of the Medical Museum, who was sent to Cuba in June for service with the Reed Board, had the hazardous and exacting task of the daily care and feeding of Dr. Lazear's "birds."<sup>20</sup>

To carry out the contemplated experiments, however, there had to be more than a theory and a breeding stock of mosquitoes. There had to be money, for one thing—precious little money by comparison with modern expenditures or in relation to the results accomplished, but money just the same. And there had to be experimental "animals"—and so far as anyone then knew, the only animal subject to yellow fever was the genus *Man*, himself.

This disturbing fact led to another problem—not where to get the men necessary for the experiments, for that problem was to be solved by ready volunteers, but whether to authorize experiments on human subjects. In the light of the results accomplished, that question does not seem as thorny now as it must have seemed to Dr. Reed, who had the responsibility for proposing such a course to Surgeon General Sternberg, and to Maj. Gen. Leonard Wood, Governor General of Cuba, who had the final responsibility for authorizing human experimentation.

It happens that the experiment was brilliantly successful, and that the only life lost was that of one of the experimenters, but it is easy to imagine, if things had turned out differently, the outcry that would have assailed those responsible. Fortunately, the United States was represented in Cuba in 1900 by a governor general who, being a medical officer himself, had the understanding of the problem and the courage to face it in his own responsibility—and Walter Reed got the necessary authority and backing.

Before all arrangements for the mosquito tests could be set up, Reed was compelled, on account of the death of Dr. Edward O. Shakespeare of the Typhoid Board, to hasten back to the United States to work on the preparation of the report of that board for publication.<sup>21</sup> He left Cuba on 2 August, and did not get back to Quemados until 4 October. In his absence, there had been developments both tragic and triumphant in the work on yellow fever.

### *Human "Guinea Pigs"*

One of the conditions upon which the Yellow Fever Board had recommended the use of human "guinea pigs" in its work was that the members of

<sup>20</sup> (1) Truby, *op. cit.*, pp. 92, 93. (2) Lamb, *op. cit.*, p. 119.

<sup>21</sup> Ireland, M. W.: The Conquest of Yellow Fever. *The Military Surgeon* 64: 244-251, February 1929.

the Board should themselves be the subject of experiment. Consequently, in the first group of eight inoculations by the bites of mosquitoes hatched from Dr. Finlay's eggs, administered between 1 August and 19 August, Dr. Lazear was included as Case No. 6. The result in all eight cases, listed in the report by number only, was negative—no yellow fever. The same thing was true of Case No. 9, that of Dr. A. S. Pinto, bitten on 25 August by a mosquito infected 10 days earlier.<sup>22</sup>

But on 27 August, Dr. Carroll was bitten by a mosquito infected 12 days before—and on 31 August, Dr. Carroll sickened with a well-defined and very severe case of yellow fever, the first such case traceable to the bite of an infected mosquito under experimental conditions. Dr. Carroll's case came very near to proving fatal and, in its aftereffects, undoubtedly shortened his life.

The second case of experimental yellow fever was that of Pvt. William H. Dean of the Seventh Cavalry who, on 31 August, the day that Dr. Carroll was taken sick, was bitten by the same mosquito which had infected him, and also by three others which 12 days before had fed on the blood of yellow fever patients. Dean, referred to in the original reports of the investigation as "XY," had a mild but definite attack of yellow fever.<sup>23</sup>

Up to this time, there had been eleven "bitings" by the experimental mosquitoes, with but two cases of fever resulting—a circumstance which was afterward found to be due to the fact that only the female of the species could transmit the disease, and she could not do so until at least 12 days after becoming herself infected, and that the first nine "bitings" had been too soon after the mosquitoes had been fed on yellow-fever blood. Moreover, there was a shadow of doubt as to whether Major Carroll's case was of experimental or accidental origin, since he had been in infected areas before and after being bitten. As to the case of Private Dean, however, there was no doubt, since he had been a patient in the post hospital at Columbia Barracks, and had not been exposed to any source of infection other than the four experimental mosquitoes.

### *The Death of Dr. Lazear*

In addition to the two cases of Carroll and Dean, there was the tragic case of Dr. Lazear, who was stricken on 18 September and died a week later. After his death, a notebook containing entries about his experiments was found in the pocket of a uniform which he had been wearing. This little notebook, when analyzed by Reed, furnished the clue to the secret of mosquito transmis-

<sup>22</sup> (1) Reed et al., *Philadelphia Medical Journal*, 6 (1900), p. 792. (2) Truby, *op. cit.*, pp. 126, 220.

<sup>23</sup> Reed et al., *Philadelphia Medical Journal*, 6 (1900), p. 792.

sion of the disease—namely, that it was a matter of timing of the bites, both of the original patient from whom the disease was transferred and also of the transferee. To become infected, the mosquito must bite the sick patient within the first 3 days of illness; to transfer the infection, at least 12 days must have elapsed since the infection was acquired by the mosquito. The nine unsuccessful attempts to produce the disease were explained by the recorded fact that the original patient was bitten after the third day of his illness, or that the attempt to convey the disease was made less than 12 days after the mosquito was infected.

Dr. Lazear's own case presented a puzzle. Reed had no doubt that it was due to the bite of a mosquito but could not be sure that the mosquito was one of those reared in the laboratory. Dr. Lazear told Major Carroll and Maj. William C. Gorgas that, while engaged in letting his experimental mosquitoes bite yellow fever patients at the Las Animas Hospital in Havana, a stray mosquito had landed on his hand, and he had permitted it to drink its fill. Obscure and unfinished notations in Lazear's pocket memorandum book, however, indicated that he might have applied some of the laboratory mosquitoes to his own arm, knowing by that time that there was every chance of infecting himself with a possibly fatal disease.

This raised a question as to how the case of Lazear would be treated in the report. There was no doubt in Reed's mind of his illness and death from the bite of a mosquito, and there is persuasive evidence that he believed that the mosquito was actually one of the purebred laboratory strain which Lazear had deliberately applied to himself, and not the stray insect which Lazear had mentioned during his illness to Carroll and Gorgas. The reason for the discrepancy, it is surmised, was possibly an apprehension on the part of the sick man that his life insurance might be forfeited if he deliberately infected himself with a possibly fatal disease.<sup>24</sup> Reed decided to list the cause of Dr. Lazear's lamented death as the bite of the mosquito in Las Animas Hospital, as related by Lazear, but he accepted the case as evidence of the validity of the mosquito theory, adding strength to the Carroll and Dean cases.

While analyzing the evidence resulting from the preliminary experiments, Reed was intensely occupied in setting up arrangements for further experiments

<sup>24</sup> (1) Truby, *op. cit.*, pp. 123-127. (2) Hench, Philip S.: Conquerors of Yellow Fever. *Hygeia* (The Health Magazine) October 1941, p. 5. Dr. Hench, of the Mayo Clinic, has found in the study of the Walter Reed epic an absorbing avocation. In 1940, he visited the remains of Camp Lazear, accompanied by John J. Moran, one of the original volunteers, who identified the "infected bedding and clothing building," falling into decay. Efforts to have the building restored and preserved failed. *New York Times*, 4 November 1951.

under controlled conditions designed to test the truth of the theory beyond any question.

Meanwhile, Reed felt warranted in making a report of results as far as the work had gone. This he did, in person, in a paper, "The Etiology of Yellow Fever: a Preliminary Note," read before the American Public Health Association, meeting at Indianapolis from 22 October to 26 October 1900, and published in the *Philadelphia Medical Journal* of 27 October. The "Preliminary Note" disposed of the *bacillus icteroides* of Sanarelli, and drew the flat conclusion that "The mosquito acts as the intermediate host for the parasite of yellow fever."

Reed's preliminary report got a rather cool reception, and aroused some opposition, notably from Dr. Eugene Wasdin of the Marine Hospital Service, who was committed to the Sanarelli thesis, and who attacked Reed's conclusions in the *Medical Journal* of November 17.<sup>25</sup>

### *Studies at Camp Lazear*

Before that time, Reed was back in Cuba and had plunged into the work of planning and providing a camp—Camp Lazear, it was appropriately called—where tests of the transmission of yellow fever could be carried on under conditions controlled with certainty. A site was picked near Columbia Barracks but far enough away from habitation to insure isolation. The distinguishing feature of the camp, located at Quemados de Marianao, a suburb of Havana, was two small frame buildings, each 14 by 20 feet, located on the opposite slopes of a little valley about 80 yards from each other and the same distance from the camp proper. One, the "Infected Mosquito Building," was designed to test the mosquito theory; the other, the "Infected Clothing Building," was designed to test the currently accepted theory of infection by contact with the clothing, bedding, and other articles which had been in close contact with yellow fever patients (fig. 45).<sup>26</sup>

Camp Lazear was put in operation on 20 November 1900, manned by a service detachment of volunteers—two doctors, one an immune; one hospital steward, an immune; nine privates of the hospital corps, one of whom was immune; and an immune ambulance driver. A strict quarantine was established, with no one except the four immunes permitted to enter or leave the isolated camp.

<sup>25</sup> Dr. Wasdin's article appears in: *Philadelphia Medical Journal* 6: 951, 952, 17 November 1900.

<sup>26</sup> Reed, W., Carroll, J., and Agramonte, A.: The Etiology of Yellow Fever. An Additional Note. *Journal of the American Medical Association* 36: 431-440, 16 February 1907.

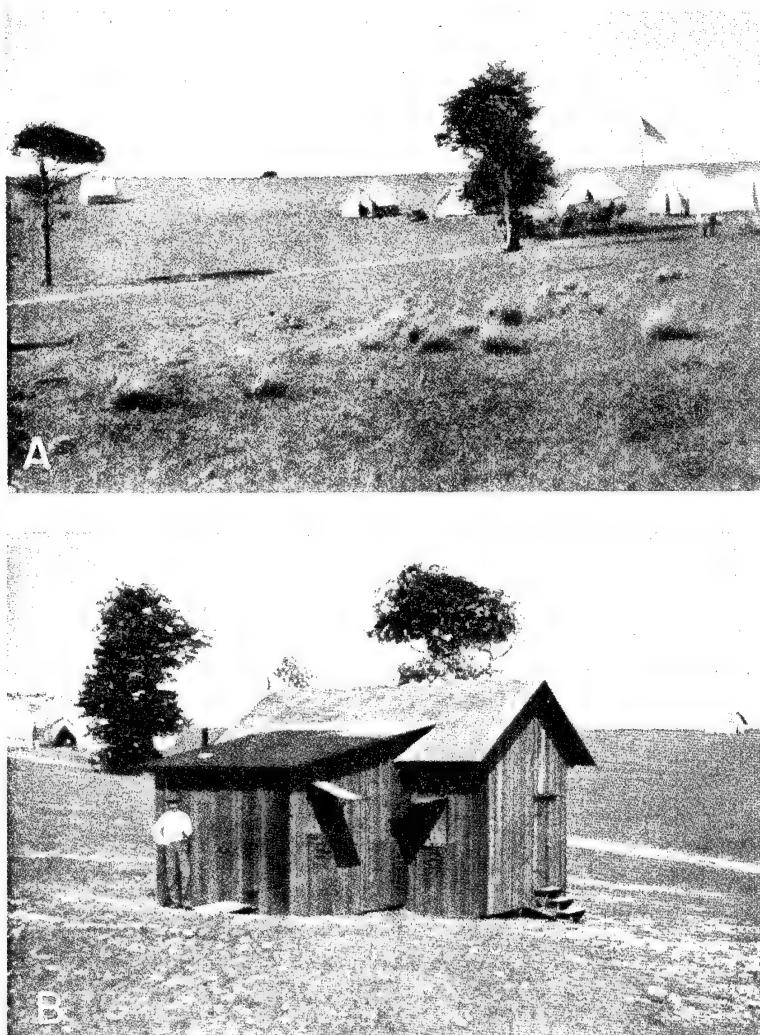


FIGURE 45.—Camp Lazear. A. The small cabins in the distance are the "Infected Mosquito Building" and the "Infected Clothing Building." The tents housed the detachment. B. Building in which the fomites theory was disproved.

For subjects upon whom the experiment was to be carried out, the original reliance was placed upon securing the services of some of the numerous new Spanish immigrants to Cuba who, in the language of the agreement which each one signed, understood "perfectly well that in case of development of yellow fever in him, that he endangers his life to a certain extent but it being entirely impossible for him to avoid the infection during his stay in this island,

he prefers to take the chance of contracting it intentionally in the belief that he will receive \* \* \* the greatest care and the most skillful medical service."

A further consideration was the payment of \$100.00 in American gold and, in case of contracting yellow fever, an additional \$100.00, to be paid to the subject if he survived; otherwise, to the person whom he designated. The subject bound himself not to leave the camp during the period of the experiments, forfeiting all benefits if he should do so.<sup>27</sup>

Some of the Havana newspapers "have abused us soundly and have charged us with all kinds of inhumanity and barbarity," Reed wrote General Sternberg on 26 November, but, he added, "the Spanish consul, a most courteous and intelligent gentleman, assures us that we shall have his support, as long as we do not use minors and the individual gives his written consent \* \* \*."<sup>28</sup>

### *Soldier Volunteers*

Although no United States soldier was asked to submit to the inoculation tests, Pvt. John R. Kissinger, of the hospital detachment, and John J. Moran, a civilian clerk in the headquarters of Brig. Gen. Fitzhugh Lee, astonished and delighted Reed by volunteering, upon the condition that they receive no money. There is an apocryphal story that Major Reed, upon receiving their unsolicited offer, which was renewed after the risks they ran had been carefully explained to them, rose, touched his forehead, and said, "Gentlemen, I salute you." The story of the salute is probably not true in detail, but he did say in his published account of the experiment that "in my opinion this exhibition of moral courage has never been surpassed in the annals of the Army of the United States."<sup>29</sup>

The remark was made of Private Kissinger, who was the first to become the subject of experiment and to contract yellow fever, but the same remark would apply to Moran, who volunteered along with him, and to the other 12 who volunteered to subject themselves to inoculation with fever—Dr. Robert P. Cooke of Virginia, James A. Andrus of Pennsylvania, Thomas M. England of Ohio, Levi E. Folk of South Carolina, Wallace W. Forbes of Illinois, James F. Hanberry of South Carolina, James Hildebrand of Georgia, Warren G. Jernegan of Florida, William Olsen of Wisconsin, Charles G. Sontag of

<sup>27</sup> An original contract, in Spanish, signed by Walter Reed and Vicente Presedo, with an English translation, is displayed in the Medical Museum of the Armed Forces Institute of Pathology.

<sup>28</sup> Truby, *op. cit.*, p. 153.

<sup>29</sup> Baltimore Address, p. 205.

South Carolina, Edward Weatherwalks of New Jersey, and Clyde L. West of Indiana.<sup>30</sup>

The first inoculation by mosquito bite which produced yellow fever was that of Kissinger, who was bitten on 5 December, and fell sick on the night of the 8th. "As he had been in our camp 15 days before being inoculated," Reed exultantly wrote his wife, "and had no other possible exposure, the case is as clear as the sun at noonday, and sustains brilliantly and conclusively our conclusions."<sup>31</sup> Between the 10th and the 15th, the proof was strengthened by the development of three more cases, after which there were no cases for 10 days, due to a cessation of inoculations—a hiatus which demonstrated that the four cases in 1 week did not mean that the camp itself was infected.<sup>32</sup>

While continuing his experiments with mosquito bites, Dr. Reed was carrying on a rigorous test of the theory that infected clothing and bedding was the transmitting agent of the fever—a theory unquestioningly accepted by the medical profession and acted upon in framing and enforcing quarantine regulations. The very name given to these infected articles, supposed to be capable of passing on the flame of infection—"fomites," a word derived from the Latin term for "tinder"—indicates how seriously they were regarded as a means of spreading the flames of the fever. The fomites theory, as Reed remarked, was "not disputed by anyone."<sup>33</sup> To establish the mosquito-infection theory was not enough so long as the theory of infection by fomites was left undisturbed.

### *Testing the "Fomites" Theory*

Consequently, on 30 November the testing of the infective power of fomites was begun in the "Infected Clothing Building"—a tight little structure, proofed against the entrance of mosquitoes, with a minimum of ventilation, and heated

<sup>30</sup> The names of the "Participants of Yellow Fever Investigations in Cuba" appear annually in a special "Role of Honor" in the *Army Register*, in compliance with an Act of Congress approved by President Calvin Coolidge on 28 February 1929. In addition to those who took part in the first series of experiments, the Roll of Honor includes those who volunteered in 1901 to undergo injection of blood from infected persons, as follows: Assistant Surgeon Roger P. Ames of Louisiana, John R. Bullard of Massachusetts, Albert Coyington of North Carolina, Wallace W. Forbes of Illinois, and Paul B. Hammann of Illinois (born in Germany). In special category was Gustaf E. Lambert, male nurse, born in Sweden, who cared for the fomites in the infected clothing experiment.

Not to be forgotten also are the five Spanish volunteers, who stayed to the end of the first series of experiments, four of whom developed yellow fever—Jacinto Mendez Alvarado, Antonio Benigno, Micanor Fernandez, Jose Martinez, and Vicente Presedo; and two others who participated in the 1901 experiments—Pablo Ruiz Castillo and Manuel Gutierrez Moran.

<sup>31</sup> Kelly, *op. cit.*, pp. 140-142.

<sup>32</sup> Reed et al., *Journal of the American Medical Association*, 36 (1901), p. 435.

<sup>33</sup> Baltimore Address, p. 202.

above 90° F. Into this environment, there were introduced four large locked boxes of sheets, blankets, pillowslips, and other articles "contaminated by contact with cases of yellow fever and their discharge \* \* \* purposely soiled with a liberal quantity of black vomit, urine and fecal matter \* \* \*." Dr. Cooke and Privates Folk and Jernegan, all nonimmunes, entered the building, unpacked the boxes, handled and shook out their contents so as to "disseminate through the air of the room the specific agent of yellow fever, if contained in these fomites \* \* \*," used the fomites to make their beds, and lay down to sleep upon the beds so made—and continued to do likewise for each of the next 19 nights, after which they were quarantined while other soldiers—England, Hanberry, Hildebrand, and Weatherwalks—repeated the horrible experience, even adding to it the macabre touch of sleeping in the shirts which had been worn by yellow fever victims.<sup>34</sup>

Summing up the ordeal of the fomites, Major Reed said, in his address at Baltimore, that these volunteers, sleeping every night in a building into "which no sunlight ever came" and which was purposely designed to lack air ventilation, "engaged in the morning in packing boxes with garments much soiled by contact with the bodies and excreta of yellow fever patients, and at night unpacking these same boxes in order to obtain articles for their beds and clothing for their bodies; in other words, sleeping in the very beds and garments just vacated by cases of yellow fever \* \* \* averaging each 21 nights amid such surroundings, came out of this pesthouse \* \* \* none the worse for their exposure. Not one had contracted the disease."<sup>35</sup>

"Yellow fever can no more be transmitted in that way than intermittent fever," Dr. Reed wrote his wife, while the experiments were still underway. Later, in an address before the American Public Health Association, meeting at Buffalo on 18 September 1901—a year after he had presented his "Preliminary Note" to the same organization—Reed declared that the doctrine of the spread of yellow fever by fomites "burst like a bubble" at the first touch of "actual experiment upon human beings."<sup>36</sup>

In clearing up theories, there was another that called for attention—the theory of infection from a contaminated house. To test this, there was the "Infected Mosquito Building"—well ventilated, tightly screened, with a mosquito-proof screen dividing its interior into two parts, differing only in that one side of the building was free from mosquitoes, while infected insects were released in the other side. In this side, Mr. Moran allowed 15 mosquitoes to

<sup>34</sup> Reed et al., *Journal of the American Medical Association*, 36 (1901), pp. 431-440.

<sup>35</sup> Baltimore Address, pp. 207, 208.

<sup>36</sup> (1) Kelly, *op. cit.*, p. 149. (2) Reed and Carroll, *Medical Record*, 60 (1901), p. 642.

bite him during three visits, while two other nonimmunes, acting as controls, occupied the other side of the building, free of mosquitoes. Moran, who had been in quarantine for 32 days before being bitten and had had no other chance to catch yellow fever, sickened on Christmas morning. The controls, who spent 14 nights in the room protected by the wire screen, but who had breathed the same air as Moran, remained well. The demonstration was complete that a house is infected with yellow fever only if it contains infected mosquitoes.<sup>37</sup>

To insure that the particular species of mosquito which possessed this infective potency should be accurately depicted for surer identification, Major Reed asked General Sternberg, on 22 December, to have Dr. J. C. McConnell of the Medical Museum sent to Cuba to "make drawings of the mosquito and larvae from live specimens." Dr. McConnell, who had returned to the Museum as anatomist and who acted, in addition, as a one-man Medical Illustration Service, came down bringing his camera lucida and paper, and by the end of the year was at work on his sketches.<sup>38</sup>

### *Transmission by Mosquitoes Established*

As the year ended, Reed had every reason for gratification. The fomites experiment was still underway, as were experiments with the transmission of yellow fever by direct infusion of infected blood from an active case to non-immune volunteers. These experiments, mostly carried out in January and February 1901, proved that the presumptive "parasite" of yellow fever circulates in the bloodstream and is directly transmissible from man to man without the necessity of an intermediate host. These experiments, however, in no way vitiated the conclusion that the only method of propagating yellow fever in nature is by the bite of a mosquito which has drunk the blood of a yellow fever patient—a conclusion which was to be presented by Reed, on behalf of himself, Carroll, and Agramonte, and with a tribute to Lazear, before the Pan American Medical Congress, meeting in Havana on 6 February 1901.

This, and the other conclusions of the report, backed by the unimpeachable testimony of unassailable research techniques, were to be almost immediately accepted by the medical world and the world at large. To Dr. Finlay, as Reed said, "must be given full credit" for the original idea and for the persistence with which it was maintained in the face of indifference and even ridicule. But to Walter Reed, James Carroll, Aristides Agramonte, and the lamented Jesse W.

<sup>37</sup> Baltimore Address, pp. 204, 205.

<sup>38</sup> Truby, *op. cit.*, pp. 166, 172, 177.

Lazear, and to the corps of intrepid and dedicated volunteers who offered themselves for experiment, must go the credit for demonstrating and establishing the fact that explained the mysterious behavior of yellow fever and offered a method of successfully combating it. As Dr. Agramonte wrote in his biographical sketch of Dr. Finlay, speaking of the parts played by the Cuban doctor and the U.S. Army Board, "the great credit due the one robs not the other of a particle of his glory."<sup>39</sup>

Already, even before the experiments were concluded and the results presented, the findings had begun to be put into effect in the American Forces occupying Cuba. At the suggestion of Maj. Jefferson Randolph Kean, Acting Chief Surgeon, General Wood issued General Orders No. 6 on 21 December 1900, prescribing mosquito-control methods for application at all posts on the island, "the Chief Surgeon of the Department having reported that it is now well established that \* \* \* yellow fever \* \* \* (is) transmitted by the bites of mosquitoes \* \* \*."<sup>40</sup>

Reed himself had been positive ever since Kissinger came down with yellow fever that, as he wrote Lt. Albert E. Truby on the 10th, "the theory is all right."<sup>41</sup> The theory, as he wrote his wife on 9 December, was Finlay's, "and he deserves great credit for having suggested it, but as he did nothing to prove it, it was rejected by all, including General Sternberg. Now we have put it beyond cavil \* \* \*."<sup>42</sup>

Writing to his wife again, in the closing minutes of the closing year of the 19th century, Reed expressed feelingly the glow of modest exultation at this great accomplishment:

Only ten minutes of the old century remains. Here I have been sitting, reading that most wonderful book, La Roche on Yellow Fever written in 1853. Forty-seven years later it has been permitted to me and my assistants to lift the impenetrable veil that has surrounded the causation of this most wonderful, dreadful pest of humanity and to put it on a rational and scientific basis. I thank God that this has been accomplished during the latter days of the old century. May its cure be wrought in the early days of the new! The prayer that has been mine for twenty years, that I might be permitted to do something to alleviate human suffering has been granted! \* \* \* Hark, there go the twenty-four buglers in concert, all sounding "taps" for the old year.<sup>43</sup>

<sup>39</sup> Agramonte, A.: Dr. Carlos J. Finlay: A Biographical Sketch. *Transactions of the American Society of Tropical Medicine* 10: 27-31, 1916.

<sup>40</sup> Truby, *op. cit.*, pp. 187, 224, 225.

<sup>41</sup> *Ibid.*, figure 26.

<sup>42</sup> Kelly, *op. cit.*, p. 141.

<sup>43</sup> *Ibid.*, pp. 152, 153.

On February 9, 1901, 3 days after he had presented to the Pan American Medical Congress the results of the experiments at Camp Lazear, Major Reed sailed for home, leaving Carroll behind in Havana to finish up certain details, including winding up the affairs of Camp Lazear, which was closed on 1 March 1901.<sup>44</sup>

In Havana also were Dr. Finlay, the theorist whose theories had been vindicated by experiment, and his friend—and Reed's—Maj. William Crawford Gorgas, whose original skepticism as to the theory had been replaced by acceptance, and whose acceptance and resulting action was to give the theory its first practical application. Dr. Gorgas still was not convinced that the mosquito was the only means of natural transmission of the disease, but realizing that the insects were effective carriers, he declared war on the *Stegomyia fasciata* in Havana.

Yellow fever had claimed an average of nearly 500 lives in Havana annually for the 20 years, 1880-1899. In 1899 and 1900, the city was "cleaned up," with good effect as to general health, but still there were, in 1900, more than 300 deaths from yellow fever. In January 1901, there were seven deaths, and in February, five. In February, the new regulations as to mosquito control were put into effect. In March, four new cases were reported, with one death. In April, there were three cases and no deaths; in May, four cases and no deaths; in June, neither a case nor a death. In July, the disease was reintroduced into Havana from the interior, with three cases and one death. August saw eight new cases and two deaths; September, five cases and one death; October, two cases but no death—and thereafter, for the remainder of 1901 and the entire year of 1902, neither new cases nor deaths from the scourge that for over 140 years had never been absent from Havana's streets and homes.<sup>45</sup>

The task of mosquito control in a tropical city was prodigious in its difficulties and infinitely vexing in its details, but it was accomplished by the vigor, firmness, patience, and tact of the great health administrator, Gorgas. And in its accomplishment, it provided the perfect proof of the correctness of the conclusions of the great medical discoverer, Reed.

Back in Washington, Reed continued his work for the Yellow Fever Commission, as well as his work as Curator of the Medical Museum and professor of bacteriology at Columbian (now George Washington) University. He was,

<sup>44</sup> (1) *Ibid.*, p. 163. (2) Reed, *Journal of Hygiene*, 2 (1902), p. 108.

<sup>45</sup> (1) Reed, *Journal of Hygiene*, 2 (1902), pp. 101, 102. (2) Kelly, *op. cit.*, pp. 182-187. (3) Senate Document 822, 61st Congress, 3d session, pp. 221, 235, 236.

for the season, relieved of his work as professor of the Army Medical School which had been suspended for the period of the Spanish War and was not to resume its sessions until October 1901. Meanwhile, Reed, as he wrote to Carroll, who was still in Havana, was "tied down to the Army Examining Board."<sup>46</sup>

### *Search for a Cause*

The Yellow Fever Commission had succeeded in demonstrating to the satisfaction of the world the method of transmission of the disease, but the discovery of the activating cause of the disease itself was unfinished business. In 1898, Friederich A. J. Löffler and Paul Frosch had demonstrated that hoof-and-mouth disease in animals is due to something called, for want of a better name, a "virus." Prof. William H. Welch, who had taught Reed at Johns Hopkins, and who had been a fellow-pupil of Löffler's under the great Robert Koch, called Reed's attention to the Löffler-Frosch findings in the early summer of 1901.

To Reed and Carroll, it appeared possible that the same sort of substance might be the cause of yellow fever. A brief outbreak of the disease in Santiago de las Vegas offered an opportunity to put the supposition to the test, so Carroll was sent back to Cuba in August 1901 to carry on the experiments. The tests showed that the infective agent was present in the blood and in the blood serum of fever patients, and that the power to produce fever persisted even after the serum had passed through "the pores of a filter which ordinarily serves to prevent the passage of all known bacteria."<sup>47</sup> It was to be yet another quarter of a century before it was finally established that the infecting agent of yellow fever is not a visible "parasite" such as Reed and Carroll sought, but is a virus which filters had not yet trapped nor microscopes revealed.

In the little more than a year which remained of what has been described as the "fifty-one years of Walter Reed's industrious, blameless life,"<sup>48</sup> Reed lost no appropriate opportunity to give the medical world the lessons learned in the work of the Yellow Fever Commission. Besides his appearance before the Medical and Chirurgical Faculty of Maryland at Baltimore in April 1901, and his second appearance before the American Public Health Association in September, both of which have already been referred to, he appeared before the

<sup>46</sup> Senate Document 822, 61st Congress, 3d session, pp. 163, 164 (letter of 26 February 1901).

<sup>47</sup> (1) *Ibid.*, p. 165. (2) Reed, *Journal of Hygiene*, 2 (1902), p. 106.

<sup>48</sup> McCaw, Walter D.: *Walter Reed: A Memoir*. Washington: The Walter Reed Memorial Association, 1904, p. 1.

American Association of Physicians, meeting in Washington in July,<sup>49</sup> and before the Society of American Bacteriologists, meeting in Chicago at the end of the year.<sup>50</sup> In addition, he published in the *Journal of Hygiene*, a British periodical, a summary article of recent researches concerning the etiology, propagation, and prevention of yellow fever by the United States Army Commission.<sup>51</sup>

In these various papers and publications, he outlined in detail the experimental procedures followed and the results obtained, demonstrating to all who heard and read that both in its occurrences and its nonoccurrences at Camp Lazear, "yellow fever strictly obeyed the behests of the experimenters."

Dr. Reed resumed his teaching, while continuing as Curator of the Medical Museum, but by the fall of 1902, it became evident that his strength was failing. In November, he suffered an attack which was diagnosed as appendicitis. On the 17th, at the Army General Hospital at Washington Barracks, he underwent an operation for removal of a ruptured appendix. "Major Reed received the accepted treatment" of that period, according to Dr. Charles Stanley White, and "was in most competent hands."<sup>52</sup> Everything was done for him that medical experience dictated and the personal solicitude of affectionate association could suggest—but on 22 November 1902, Walter Reed, who "gave to man control over that dreadful scourge, Yellow Fever,"<sup>53</sup> being but 51 years of age, died, to live among the medical immortals.

<sup>49</sup> Reed, W., Carroll, J., and Agramonte, A.: Experimental Yellow Fever. *American Medicine*, Philadelphia 2: 15-23, 6 July 1901.

<sup>50</sup> Reed, W., and Carroll, J.: The Etiology of Yellow Fever. A Supplemental Note. *American Medicine*, Philadelphia 3: 301-305, 22 February 1902.

<sup>51</sup> Reed, *Journal of Hygiene*, 2 (1902), pp. 101-119.

<sup>52</sup> White, Dr. Charles Stanley: The Last Illness of Major Walter Reed. *Medical Annals of the District of Columbia* 24: 396-398, August 1955. The surgeon in charge was Maj. William Cline Borden, assisted by Lieutenants Ford and Conner, with Dr. White as anesthesiologist. Others in attendance were: Surgeon General O'Reilly, Maj. J. R. Kean, Capt. F. P. Reynolds, and Doctors Wallace Neff and Bovee. Dr. Borden, who was Reed's devoted friend, was more than any other one individual responsible for the creation of the Army Medical Center which bears the name of Walter Reed—a project "known to his contemporaries as 'Borden's dream'." In Ramsey, Herbert P.: *Washington Medical Institutions: Walter Reed Army Medical Center*. *Medical Annals of the District of Columbia* 28: 225-231, April 1959.

<sup>53</sup> (1) The quotation is from the citation accompanying the award of an honorary M.A. degree by Harvard University in 1902. (2) In 1911, the U.S. Senate published Document 822, 61st Congress, 3d session, under the title "Yellow Fever." The document includes tributes to Reed and his work, among them the declaration of President Theodore Roosevelt that Reed left "mankind his debtor" and the statement of Gen. Leonard Wood that "his was the originating, directing, and controlling mind in this work \* \* \*". The document also reprints seven of Reed's papers and addresses on yellow fever and three by Carroll on the same subject, together with copies of reports of the practical application of the discoveries of the Yellow Fever Board, by Col. Valery Havard, Chief Sanitary Officer of the Department of Cuba, and by Maj. W. C. Gorgas, Chief Sanitary Officer in Havana.

## CHAPTER VII

# Triumph Over Typhoid

Writing in 1906, Maj. Jefferson Kean declared that "Typhoid fever is today, on account of its wide dissemination, the persistent vitality of its infecting organism, the duration and severity of its attack and its large death rate, the most formidable infectious disease with which we have to contend in military life."<sup>1</sup>

Of this fact, the Nation had had melancholy proof in 1898, during and after the war with Spain. Hostilities with Spain ended with the signing of the peace protocol on 12 August of that year, but there was no treaty of peace with a more insidious enemy, the *Bacillus typhosus*, as it was then called, or *Salmonella typhosa*, to give the microorganism its present-day name. Typhoid fever struck one out of every five soldiers in the national encampments within the United States, with a date rate of more than 7½ percent of those stricken.<sup>2</sup>

To the study of this epidemic, Surgeon General George M. Sternberg assigned Maj. Walter Reed of the Regular Army, Curator of the Army Medical Museum, and two surgeons of the Volunteers—Maj. Victor C. Vaughan, dean of the Medical School of the University of Michigan, and an epidemiologist and microbiologist of note, with special experience in the examination of water supplies, and Maj. Edward O. Shakespeare of Philadelphia who, as special commissioner from the United States, had studied cholera epidemics in Spain and India.

The new Board, set up by General Orders No. 194, Adjutant General's Office, on 18 August 1898, lost no time in getting to work. On 20 August, they were at Camp Alger at Dunn Loring, Va., near Washington. There they found hundreds of cases of fever which they believed to be typhoid, but which most of the medical officers in attendance had diagnosed as malaria.

<sup>1</sup> Kean, Jefferson R.: The Prevention of Disease in the Army (The Seaman Prize Essay). The Military Surgeon 18: 13, 1906.

<sup>2</sup> Reed, W., Vaughan, V. C., and Shakespeare, E. O.: The Origin and Spread of Typhoid Fever in United States Military Camps During the Spanish War of 1898. Volume 1. Washington: Government Printing Office, 1904, p. 674.

## *Typhoid and the Medical Museum*

The question could be settled only by microscopic pathological examination, and there was not a microscope in the camp. Authority to set up a diagnostic laboratory in each camp was requested and was granted. Doctors William M. Gray and James Carroll of the staff of the Army Medical Museum were assigned to the laboratory at Camp Alger, the first to be established. Later, after the troops left Alger, the activity was transferred to Fort Myer, Va., and afterward to Jacksonville, Fla.<sup>3</sup>

The Typhoid Board's first stop on its tour of inspection of campsites and surroundings was at Fernandina, Fla., reached on 26 August. By the end of September, the Board had visited camps at Jacksonville, Fla.; Huntsville, Ala.; Chickamauga National Park, Ga.; Knoxville, Tenn.; Montauk Point, Long Island; and Harrisburg, Pa.<sup>4</sup> On much of their journey, they traveled and lived in an office car provided for their use by the Southern Railway.<sup>5</sup>

The early differences in diagnosis between the Board and the local medical officers, first evident at Camp Alger, persisted. At Jacksonville, where the VII Army Corps was encamped, the dominant diagnosis for the fevers was malaria for the milder cases, and typhomalaria for the more severe. The Reed-Vaughan-Shakespeare Board was convinced, from the clinical evidence, that many such cases were typhoid. They persuaded Brig. Gen. Fitzhugh Lee, in command of the camp, to order that 50 cases diagnosed by the camp medical officers as malaria or typhomalaria be sent to Fort Myer, where Dr. Carroll had set up his diagnostic laboratory, for microscopic tests. The tests, in every instance, showed the true diagnosis to be typhoid fever.

Being still unconvinced by the tests of a microscopist working for the Typhoid Board, further tests were made on a larger number of men, sent to major civilian hospitals in Baltimore, Philadelphia, New York, Boston, and Cleveland—and again the tests showed that the correct diagnosis was typhoid fever.<sup>6</sup>

By September, the bacteriologic laboratory was in operation at Chickamauga National Park, where 60,000 soldiers had been encamped during the summer, and where camp fever had been so prevalent that there was a dis-

<sup>3</sup> (1) Reed et al., *op. cit.*, p. xiii. (2) Vaughan, Victor C.: *A Doctor's Memories*. Indianapolis: Bobbs-Merrill Co., 1926, pp. 369-371.

<sup>4</sup> Reed et al., *op. cit.*, p. xvi.

<sup>5</sup> Vaughan, *op. cit.*, p. 380.

<sup>6</sup> *Ibid.*, pp. 372, 373.

position to term the disease "Chickamauga fever" and to ascribe it to "a miasma that arises nightly from the river and permeates the camp."<sup>7</sup> The laboratory at this camp, in charge of Acting Assistant Surgeon Charles F. Craig, was supplied with materials for its tests from pure cultures furnished by the Army Medical Museum and the Johns Hopkins University.<sup>8</sup>

In October 1898, the Board was back in Washington and at work on the laborious task of studying the detailed medical records of 118 regiments which were, or had been, in the national encampments. Leaving out of account the records of 20 regiments, which were so defective that they were discarded, the Board checked every man shown on sick report who might have been a typhoid case, tracing him through the regimental, division, and general hospitals, and even the civilian hospitals to which many men had been sent, in order to learn the course and the outcome of the disease. In 48 regiments, the subsequent medical history of every man with a short diarrhea or a supposed malarial attack was checked, in order to see whether they afterward showed a greater or a lesser susceptibility to typhoid fever. In all regiments studied, the analysis of the start and spread of the disease was localized by companies; in many regiments, it was carried down even to the squad, with the date and order of occurrence of the disease listed by individual tents.

At the end of June 1899, the appropriation for the work of the Typhoid Board ran out, and Doctors Vaughan and Shakespeare were relieved from duty. They continued the work on their own account, however, dividing the sick reports and taking them to their respective homes for further analysis. On 2 June 1900, a meeting of the members of the Board was to have been held, but on the day before the appointed meeting, Dr. Shakespeare died. Three weeks later, Major Reed was on his way to Cuba to meet the menace of yellow fever; Dean Vaughan, however, had prepared an abstract of the findings of the Board, which was concurred in by Major Reed, and was published in 1900.

### *The Typhoid Board's Report*

The abstract, however, did not carry the convincing authority of the supporting evidence, and in 1903, largely at the instance of Elihu Root, Secretary of War, the Congress provided the funds for publication of the full report. In the meanwhile, Major Reed had died, leaving the task of putting the full

<sup>7</sup> *Ibid.*, p. 379.

<sup>8</sup> Reed et al., *op. cit.*, p. 301.

report into shape for publication to the surviving member of the Board, Dr. Vaughan.<sup>9</sup>

As finally issued in 1904, the report is in a massive volume of text and tables, with a second volume of maps and charts, in the preparation of which Major Reed testified that C. J. Myers, longtime Chief Clerk of the Museum, had given "invaluable assistance for two years \* \* \*."<sup>10</sup>

From the data in the two volumes of the report, 57 conclusions were drawn. The conclusions are a succinct and nearly complete compendium of information on the course, transmission, and prevention of typhoid fever in military camps or, for that matter, in civil life as well. As Major Kean wrote in his Seaman Prize Essay of 1906, the report of the board "threw a flood of light on the subject \* \* \* and remains a permanent monument to the vast labors and scientific acumen of the members of that board—Reed, Vaughan, and Shakespeare."<sup>11</sup>

As to the cause of the disease, the report clears up several theories once widely held—the "obsolete theory," as it is termed—that the disease is caused by inhalation of gaseous emanations arising from certain soils, for one, and the more sophisticated theory that the disease is due to germs which spontaneously evolve, or "ripen," from microorganisms normally present in putrefying matter. Instead, the report firmly supports the specific origin of the disease by transmission, directly or indirectly, from an infected individual to a susceptible person. With the wide dissemination of typhoid at the turn of the century, the Board found that there were plenty of sources of infection, with 82 percent of the regiments studied developing typhoid within 3 weeks after reaching national encampments. Regardless of the section of the country from which the soldiers came, and even if they were encamped under perfect sanitary conditions, the chances were that one or more cases of typhoid would develop—and every case was a potential focus of infection.<sup>12</sup>

Indeed, because of the disposition to diagnose all but clear-cut cases as malaria or typhomalaria—a term which the report recommended to be discarded—typhoid fever was found to be much more prevalent than had been supposed. In the camps, "Army surgeons correctly diagnosed about half of the cases of typhoid fever," in the opinion of the Board after checking clinical symptoms and bacteriologic findings. But even so, the Board added, the Army

<sup>9</sup> (1) *Ibid.*, pp. xiii, xiv. (2) Vaughan, *op. cit.*, pp. 391-394.

<sup>10</sup> Lamb, Dr. D. S.: A History of the Army Medical Museum, 1862-1917, compiled from the Official Records. Mimeographed copy in historical records of AFIP, p. 119.

<sup>11</sup> Kean, *The Military Surgeon*, 18 (1906), p. 13.

<sup>12</sup> Reed et al., *op. cit.*, pp. 659, 662, 663.

surgeon "in recognizing nearly half the cases of typhoid fever \* \* \*" probably did better than the average physician throughout the country does in his private practice."<sup>13</sup>

Typhoid fever, the report found, "is disseminated by the transference of the excretions of an infected individual to the alimentary canals of others." Infected individuals included those in the early and undiscovered stages of the disease, and also convalescents who had passed through the attack but continued to excrete typhoid bacteria.<sup>14</sup> The existence of "carriers" who were not themselves suffering from the disease was not known until 1907, when the report on the original "Typhoid Mary" was published.<sup>15</sup>

Contrary to the general belief—and a belief held by the Board itself at the outset of its investigation—that typhoid was primarily a waterborne disease, it was found that "infected water was not an important factor in the spread of typhoid in the national encampments in 1898." Transmission through the air in the form of dried dust carrying the bacilli of typhoid was regarded as "probable \* \* \* to some extent" and it was looked upon as "more than likely that men transported infected material on their persons or in their clothing"—a likelihood rendered all the more likely by the fact that "camp pollution was the greatest sin committed by the troops in 1898" and by the prevailing practice of detailing men from the ranks on a day-by-day basis to act as orderlies in the hospitals.<sup>16</sup>

### *A New "Villain"—The Fly*

A new villain in the transmission of the disease was found in the flies which served to convey the infected organisms from their source to a person. To the modern generation, living in a wire-screened and stableless environment, and trained from childhood to swat the fly, the idea of the fly as a carrier of disease is commonplace. In 1898, however, when schoolchildren were exhorted to emulate the fly in its supposed neatness, evidenced by constant rubbing of its wings with its legs—"washing" itself, it was thought to be—the idea that the common fly was a carrier of deadly disease was novel. General Sternberg, in his Circular No. 1, issued on 25 April 1898, had suggested the possibility of flies as a source of infection in typhoid, camp diarrheas, and perhaps yellow fever. The statistics gathered by the Typhoid Board showed that men who

<sup>13</sup> *Ibid.*, p. 674.

<sup>14</sup> *Ibid.*, pp. 663, 667, 721, appendix 3.

<sup>15</sup> Soper, George A.: The Work of a Chronic Typhoid Germ Distributor. *Journal of the American Medical Association* 48: 2019, 15 June 1907.

<sup>16</sup> Reed et. al., *op. cit.*, pp. 666, 667.

ate in screened tents were less liable to typhoid than those whose mess tents were open to the flies. The finding of the Board was explicit and convincing—"Flies swarmed over infected matter in the pits and then visited and fed upon the food prepared for the soldiers in the mess tents."<sup>17</sup>

The Reed-Vaughan-Shakespeare report takes on an even greater importance when the conditions existing in the camps in 1898, constituting the background into which the report was projected, are considered. Camp sanitation was still virtually an unknown subject to most line officers and men and, for that matter, was not well known even to many medical officers. Medical officers, moreover, lacked authority and could do little more than recommend.

In some instances, the recommendations were vigorous, as in the case of the Third Nebraska Volunteer Infantry, in camp at Jacksonville. "As we were instructed to do," writes Dean Vaughan, "we found our way to the colonel's tent and asked him to join us in the inspection of his regiment. I can only say that we found the sanitary conditions no better than in other regiments. When we were through with the inspection Major Reed said to the colonel: 'Shakespeare and Vaughan are on this commission because they know something of camp sanitation. I am here because I can damn a colonel,' and he proceeded in plain terms to speak of the responsibility of a commanding officer in looking after the health of his troops." The colonel of the Third Nebraska was William Jennings Bryan.<sup>18</sup>

The prevailing state of knowledge, or the lack thereof, is summed up by Col. P. M. Ashburn:

There was ignorance of the epidemiology of typhoid, that it was conveyed in other ways than by polluted water, ignorance of sanitation in general and of camp sanitation in particular, ignorance of proper precautions to be taken in the preparation and handling of food, ignorance of the danger of having sick men in kitchens, ignorance of the accurate methods of diagnosis which are now employed as routine in camps and hospitals, ignorance of the existence of typhoid carriers. For this ignorance no one person was to blame, it was the characteristic of the day.<sup>19</sup>

Most of this prevailing ignorance the Typhoid Report dispelled, even though it did not suspect the existence of the carrier who is not himself at the moment a victim of typhoid, and did not bring out sharply the danger of infection from the convalescent or recovered typhoid patient.

<sup>17</sup> (1) *Ibid.*, p. 666. (2) Vaughan, *op. cit.*, pp. 384, 385.

<sup>18</sup> Vaughan, *op. cit.*, p. 375.

<sup>19</sup> Ashburn, P. M.: *A History of the Medical Department of the United States Army*. Boston: Houghton Mifflin Co., 1929, pp. 169-170.

*Changes in the Museum Command*

In the interim between the accumulation of the data for the report and its publication, there had been changes in the Surgeon General's Office and in the Medical Museum. General Sternberg had reached the age of retirement in 1902, and had been succeeded by Brig. Gen. William H. Forwood who, after a service of only 3 months as surgeon general, had also retired in the same year, to be succeeded by Brig. Gen. Robert M. O'Reilly. Col. Alfred A. Woodhull had succeeded Col. Dallas Bache as Director of the Museum and Library Division in 1900, to be succeeded in the following year by Col. Calvin DeWitt, who in turn was succeeded by Col. Charles L. Heizmann in July 1903.

On 1 November 1902, Maj. Walter Reed was put in charge of the Library of the Surgeon General's Office, in addition to his duties as Curator of the Museum, and Lieutenant Carroll was designated as Acting Curator. When Major Reed died, later in the same month, Carroll was the natural choice for his successor but, perhaps because he was already in performance of the duties of the office, it was not until July 1903 that he was formally appointed to the post. In 1906, Col. Valery Havard succeeded Colonel Heizmann in charge of the Museum and Library Division, with Lieutenant Carroll continuing as Curator of the Museum. In March 1907, Carroll was promoted to the rank of major, and 6 months later, on 16 September, he died.<sup>20</sup>

Upon the death of Major Carroll, Capt. (later Maj.) Frederick Fuller Russell (fig. 46) was named as Curator of the Medical Museum and professor of bacteriology and clinical microscopy at the Army Medical School. The new Curator, 37 years old, had done his premedical work at Cornell University, and had taken his M.D. degree at the College of Physicians and Surgeons of Columbia University in 1893. After serving an internship and a residency at Bellevue Hospital in New York, and studying in Berlin, he had received a commission in the Army as first lieutenant and assistant surgeon in 1898, being promoted to captain in 1903. He had served in Puerto Rico and, briefly, at the Museum in 1900.

*Volunteers for Vaccination Against Typhoid*

In the latter years of Major Carroll's tenure as Curator of the Museum, he undertook an experiment in vaccination against typhoid fever which, in its use of human volunteers as subjects, was reminiscent of the experiments with

<sup>20</sup> (1) Lamb, *op. cit.*, pp. 122, 123, 133. (2) Senate Document 822, 61st Congress, 3d session, p. 26.



FIGURE 46.—Maj. Frederick F. Russell, seventh Curator of the Museum, 1907-1913, who introduced typhoid fever vaccination in the Army.

yellow fever in Cuba. The typhoid fever experiment, started in May 1904, called for the oral administration of dead typhoid bacilli. After experiments with rabbits and guinea pigs had succeeded in producing an immune reaction, Dr. Carroll secured the permission of The Surgeon General to call for volun-

teers who would swallow doses of nutrient bouillon which had been inoculated with typhoid bacilli killed by heat. Carroll himself swallowed the typhoid dose, as did two officers detailed to assist—Lt. Edward B. Vedder<sup>21</sup> (later Col., MC, USA, and the discoverer of the cause and the prevention of beriberi) and Lt. Harry L. Gilchrist (later Maj. Gen. and Chief of the Chemical Warfare Service). Fifty soldiers volunteered for the experiment, from whom every fifth man was accepted—Sgt. Joseph I. Howe, and Privates William E. Lumley, George Dunn, George C. Williams, George S. Ward, Robert A. Eisemann, Merl Clifford, William J. Epps, Claud W. Powell, and Robert E. Bowman.

Seven of the group developed undoubted cases of typhoid, and three others suffered attacks of a febrile disease which may or may not have been typhoid. This first attempt at a new technique in prevention failed in its purpose of producing immunity, resulting instead in attacks of the disease against which immunity was sought, but other and more successful experiments were to come.

Undismayed by the failure of the first attempt with oral typhoid vaccination, Dr. Carroll turned to a method of vaccination by hypodermic injection, first used by Sir Almroth Edward Wright, in British India in 1896, and reported in the *British Medical Journal* of 30 February 1897.

Typhoid was even more destructive among British troops in the Boer War of 1899–1902, with 31,000 cases and 5,877 deaths, than it was among the Americans in the war with Spain. Sir Almroth's vaccination was tried on a voluntary basis, with results so mixed that vaccination for typhoid was suspended in 1902 and, in 1903, its further use in the British Army was prohibited. The ban was removed, however, when the Royal College of Physicians, after full investigation, sustained the use of this method of prophylaxis.

Both the oral and the hypodermic methods of vaccination depended upon killing the bacteria in the culture by heat raised to the death point for the specific microorganism. This thermal death point had been determined by General Sternberg for typhoid and many other bacteria. In determining these death points, he had used small glass bulbs with the narrow necks sealed, thus preventing evaporation. In making larger batches of vaccine, a 1-liter flask was used, with the mouth stoppered by cotton, which permitted some evaporation. This left a ring of dried matter in the neck of the flask. Since it requires a higher temperature to kill dried typhoid bacteria than is required to kill them when moist, some of the dried organisms survived and, when the flask was handled, were washed down into the liquid where they began to grow

<sup>21</sup> Vedder, Edward B., Col., MC (Ret.): Typhoid Fever and Typhoid Inoculation in the United States Army. Unpublished typescript, made available through the kindness of Lt. Col. Henry Vedder, MC, USA.

again, with the result that the vaccine was contaminated with living typhoid bacteria. To prevent this, Russell added to each flask a small quantity of trichresol disinfectant, sufficient to kill any bacteria left alive in the vaccine.<sup>22</sup>

### *European Experience*

On 10 February 1908, Captain Russell wrote Lt. Col. W. B. Leishman, professor of pathology at the Royal Army Medical College at Millbank, London, advising that it was proposed to inaugurate antityphoid vaccination in the American Army and asking about the British experience. To this letter, Colonel Leishman cordially replied on 29 February, offering "most gladly" to give all the information he could on the subject, and sending him a culture of the strain of *Salmonella typhosa* employed by the British.<sup>23</sup>

In the summer of 1908, Surgeon General O'Reilly sent Captain Russell to Europe to study at firsthand the methods and the experience of the British and German Armies. This assignment, carried out with "great industry and ability," as The Surgeon General put it, resulted in a report which The Surgeon General described as a "very valuable treatise on the epidemiology of this disease to date."<sup>24</sup> The experience of the German Colonial Army, which had tried vaccination for typhoid in 1904 on a voluntary basis, was that the vaccinated soldier was only about one-half as likely to develop the disease as the unvaccinated soldier, and that the death rate was cut to one-fourth.<sup>25</sup> In the British experience, as described by Colonel Leishman, there had been among 6,610 unvaccinated soldiers 187 cases of typhoid, with 26 deaths, while among the 5,473 men at the same posts who had volunteered for vaccination, there had been only 21 cases and 2 deaths.<sup>26</sup>

The history of vaccination as a method of protecting troops against typhoid fever, including the experience of the British and German Armies with voluntary vaccination, was considered by a special board of officers of the newly created Medical Reserve Corps. Members of the Board were eminent clinicians and

<sup>22</sup> (1) The explanation of the accident that left typhoid bacilli alive is that of Brig. Gen. Frederick Fuller Russell, MC, USA (Ret.). (2) Memorandum of conversation with General Russell at Louisville, Ky., 28 April 1960. (3) Letter, General Russell to Dr. Edward B. Vedder, George Washington University Medical School, 25 October 1935.

<sup>23</sup> Original letter, W. B. Leishman to F. F. Russell, 29 February 1908. On file in historical records of AFIP.

<sup>24</sup> Annual Report of the Surgeon General, U.S. Army, 1909, p. 44.

<sup>25</sup> Russell, F. F.: The Experience of the German Colonial Army with Anti-Typhoid Vaccination. *The Military Surgeon* 24: 53-56, 1909.

<sup>26</sup> Journal of the Royal Army Medical Corps 12: 166, cited in: Russell, F. F.: The Prevention of Typhoid Fever by Vaccination and by Early Diagnosis and Isolation. *The Military Surgeon* 24: 484, June 1909.

pathologists—Doctors William T. Councilman, distinguished for his researches in amebic dysentery; Simon Flexner, first director of the Rockefeller Institute for Medical Research; Alexander Lambert, a distinguished internist of New York; J. H. Musser, of the distinguished Philadelphia school of practitioners of internal medicine; William S. Thayer of the Johns Hopkins faculty; and Victor C. Vaughan, surviving member of the Reed-Vaughan-Shakespeare Board—with Capt. F. F. Russell as recorder.

After studying the evidence, this Board concluded that “the practice of anti-typoid vaccination is both useful and harmless and that it offers a practicable means of diminishing the amount of typhoid fever in the Army both in times of peace and war.” The Board accordingly recommended that in time of war the practice be introduced in both the regular and volunteer forces, and that it be introduced immediately on a voluntary basis in the medical units, with an opportunity for volunteers from the Army as a whole to receive the protection of vaccination.<sup>27</sup> The findings and recommendations of the Board were approved and published in 1909, in War Department General Orders No. 10.

Meanwhile, Major Russell (he was promoted in 1909) was busy with preparations for vaccinating the volunteers, the first of whom came from the Army Medical Museum and the Medical School (fig. 47). A “special room in the Army Medical Museum was fitted up as a vaccine laboratory,” entirely separate from the School. The new laboratory, with “complete equipment of entirely new apparatus, specially planned for this particular purpose” of manufacturing vaccine, was completed in February 1909, and in March, vaccination on a wholesale scale began.<sup>28</sup>

### *Compulsory Vaccination Introduced*

Eight hundred and thirty volunteers were vaccinated by the time the 1909 report of the Surgeon General was issued, without untoward incident. By the end of the next year, 10,841 volunteers had received “shots.” In March 1911, because of troubles on the Mexican border, an entire division of the Army was mobilized in Texas. For this mobilization, vaccination was made compulsory for military personnel—and with more than 10,000 men in camp, the only death from typhoid was that of a civilian teamster who had refused vaccination. “It is hard to credit the accuracy of such a record,” declared President William Howard Taft, addressing the Medical Club of Philadelphia on 4 May 1911. “But, as I have it directly from the War Office,” he added, “I can assert it as one more instance of the marvelous efficacy of recent medical discoveries and practice”—

<sup>27</sup> Annual Report of the Surgeon General, U.S. Army, 1909, pp. 45, 46.

<sup>28</sup> *Ibid.*, pp. 46–50.

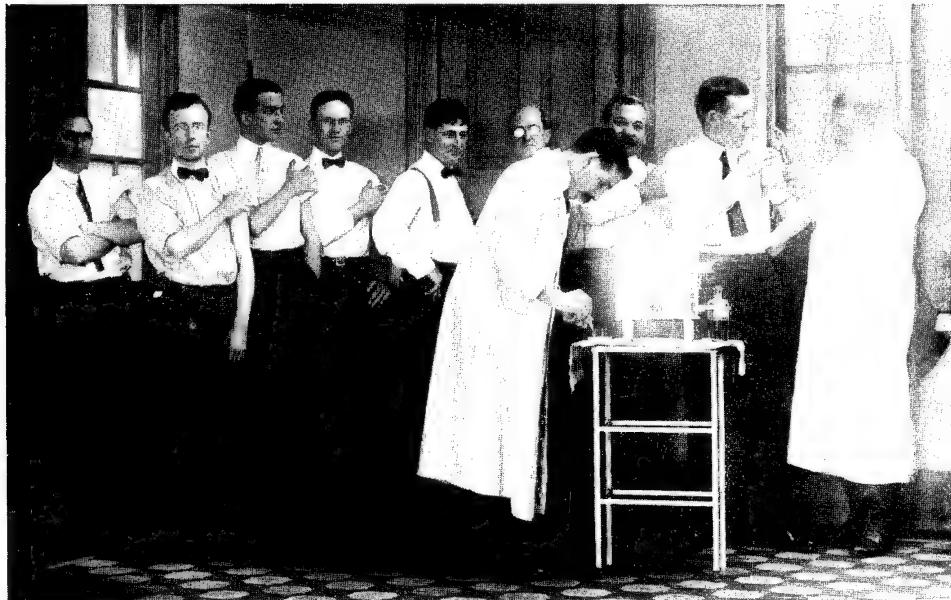


FIGURE 47.—Maj. Frederick Fuller Russell (extreme right) vaccinating volunteers against typhoid.

in which he included "modern health regulations" as well as vaccination against typhoid.<sup>29</sup>

In his Annual Report for 1913, Surgeon General George H. Torney expressed the astonishment of a veteran Army medical officer. "It seems more than marvelous," he wrote, "that among the number of men in the camps at Texas City and Galveston, and among those in the numerous camps along the Mexican border, constantly exposed to infection, not a single case has occurred."

On 30 September 1911, vaccination for typhoid was made compulsory for the entire Army, and by the end of 1911, 85 percent of all personnel had received the protection (fig. 48). The reduction in the incidence of the disease which followed was dramatic. In 1909, with fewer than 1,000 men vaccinated, there had been 3.35 cases of typhoid per thousand. In 1910, with 15 percent of the strength vaccinated, there had been 2.43 cases per thousand. In 1911, with 85 percent vaccinated by the end of the year, there were 0.08 cases per thousand. In 1912, the rate was 0.03 per thousand, and in 1913, 0.004 cases per thousand. In the Navy, where vaccination did not become compulsory until 1912, there were 361 cases of typhoid in 1911; 92 cases in 1912; and 33 in 1913.<sup>30</sup>

<sup>29</sup> President Taft and the Medical Profession. *Journal of the American Medical Association* 56: 1399-1404, 13 May 1911.

<sup>30</sup> (1) Siler, J. F., and others: Immunization to Typhoid Fever: Results obtained in the Prevention of Typhoid Fever in the United States Army, United States Navy, and Civilian Conservation Corps, by the

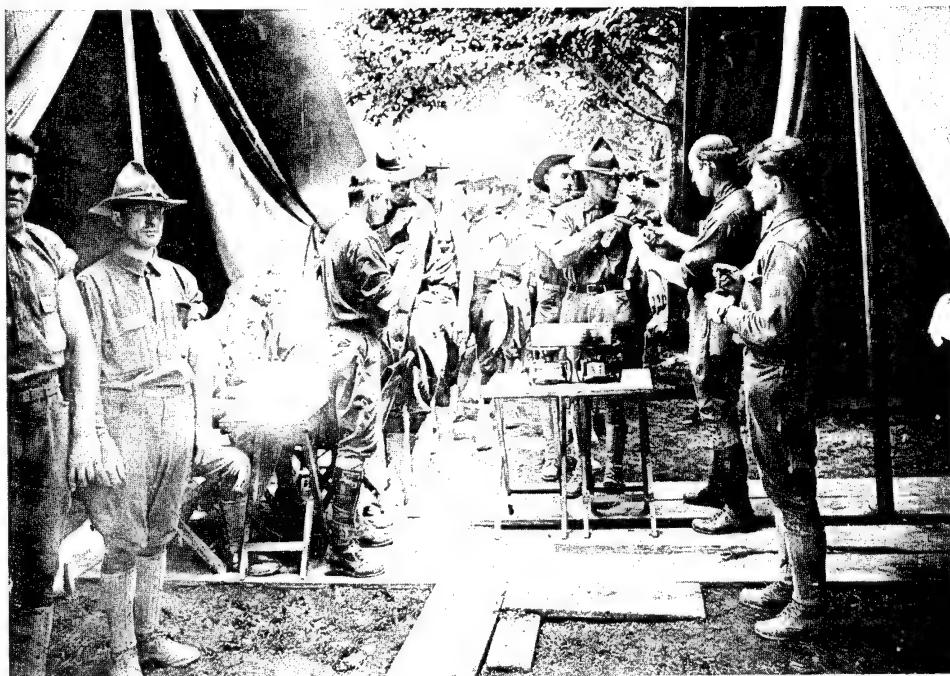


FIGURE 48.—In 1917, with the coming of World War I, typhoid vaccination scenes such as this were commonplace.

Typhoid vaccination did not originate with the United States, but the American Army was the first to make vaccination a required prophylaxis against typhoid. For this step and the beneficial results which flowed from it, credit is due to the mass experiments conceived by Major Russell and carried out at the Army Medical Museum, and with vaccines at first produced in its laboratories.<sup>31</sup>

For such results, there was a multiplicity of interacting causes. Faster and more accurate diagnosis of cases helped to reduce the risk of infection, which was further reduced by more thorough and effective disinfection—a procedure which Major Russell termed “really important” in his first article on “The Prevention of Typhoid Fever by Vaccination and by Early Diagnosis and Isolation.”<sup>32</sup>

<sup>31</sup> Use of Vaccines. *The American Journal of Hygiene, Monographic Series, No. 17*, Baltimore: Johns Hopkins Press, September 1941, pp. 12, 13. (2) Annual Report of the Surgeon General, U.S. Army, 1910, p. 48. (3) Annual Report of the Surgeon General, U.S. Army, 1911, p. 51.

<sup>32</sup> Afterward, the Army Medical School took over the preparation of antityphoid vaccine for the Army, the Navy, and the Public Health Service. An interesting account of the process and the components of the vaccine used against typhoid and the two types of paratyphoid was published in: Callender, G. R., and Luippold, G. F.: The Effectiveness of Typhoid Vaccine Prepared by the United States Army. *Journal of the American Medical Association* 123: 319-321, 9 October 1943.

<sup>32</sup> Russell, *The Military Surgeon*, 24 (1909), pp. 479-518.

Writing in answer to an inquiry as to the propriety of using typhoid vaccine in civilian institutions, in November 1909, Major Russell said:

I do not think that it is the only thing to be considered in the prevention of typhoid fever by any means; attention must be paid to all the usual sources of infection in addition to the use of vaccine. This is for the reason that the protection gained by vaccination is not absolute but only relative, and that if the infected material is present in sufficient quantities some people might develop typhoid in spite of previous vaccination.<sup>33</sup>

Greater knowledge of medical officers and greater authority for the Medical Corps resulted in stricter sanitary controls. Broader knowledge of sanitation and disease prevention among officers and men of the line made such controls more readily enforceable. The combination of a lesser number of cases and lesser chances of infection from such cases as there were, created a diminishing spiral of morbidity. There was to be no repetition of 1898. By 1910, the chances of typhoid infection in the Army had been reduced to the point that the soldier was no more likely to suffer from the disease than the civilian. And then, into this already diminishing incidence of the disease, there was introduced the added safeguard of preventive vaccination, voluntary at first and then, for the military forces, compulsory. In the 5-year period 1911-1916, the chances of typhoid in the Army were further reduced to the point that the soldier was only one-fifth as liable to the disease as the civilian.<sup>34</sup>

The English physician, William Budd, writing in 1874, stoutly maintained that typhoid was a "perfectly preventable plague" if pollution from alvine discharges of infected individuals could be checked. The Reed-Vaughan-Shakespeare study assembled overwhelming evidence to sustain the Budd theory, and outlined methods of prevention. The application of these methods, together with improved sanitary conditions generally, and the added protection of prophylactic vaccination of both civilian and military personnel, has brought measurably near Budd's prediction of perfect prevention.

For this triumph over typhoid, many causes are responsible, but no small part of the responsibility rests upon three successive curators of the Medical Museum—Reed, who organized and carried forward the great study of the disease and its prevention; Carroll, who initiated experiments with the prophylactic vaccine; and Russell, who carried the experiments to successful conclusion and mass application.

<sup>33</sup> Correspondence with John I. Armstrong, Kirkwood, Atlanta, Ga. On file in historical records of AFIP.

<sup>34</sup> Siler et al., *op. cit.*, pp. 17, 18.

## CHAPTER VIII

# The "Pickle Factory" Period

Five medical officers of the Army—Colonels Valery Havard, W. H. Arthur, and Walter D. McCaw, and Majors Carl R. Darnall and Frederick F. Russell, all of whom had special acquaintance with the work, the problems, and the situation of the Army Medical Museum or the Army Medical School, or both—met on 31 March 1909, to discuss the need for a new and suitable building for the School.

Their conclusion, arrived at unanimously, was that there was such a need. "The rooms which this school now occupy in the Museum and Library building are inadequate and unsuitable," they said in a memorandum of their discussion.<sup>1</sup> "They have never been more than a makeshift \* \* \* crowded and insufficient \* \* \*" as well as encroaching upon the space and facilities desperately needed by the Library and the Museum.

Two possible remedies were agreed upon: renting a building in Washington or "simply the carrying out of the policy already decided upon" of providing a suitable building for the school in proximity to the Walter Reed General Hospital, then nearly completed. The conferees agreed that "the second solution seems decidedly preferable," as the next step in the normal development of the general plan, and strongly urged that \$250,000, the estimated cost, "be included in the next estimates to be submitted to Congress, and that special efforts be made to induce Congress to appropriate it."

With a lively sense of the uncertainty of congressional action, however, the conferees recommended that if it should be found that "there is no disposition on the part of Congress to appropriate the necessary sum for the building" on the site already selected for it on the grounds of the Walter Reed Hospital, inquiries should be made so that "a suitable structure may be found and, if possible, rented."

<sup>1</sup> Memorandum, Office of The Surgeon General, 31 March 1909. On file in historical records of AFIP.

### *The Army Medical School Moves Out*

Almost a year later, on 2 February 1910, Curator Russell "respectfully invited" the attention of the officer in charge of the Museum and Library Division of the Surgeon General's Office, who was then Col. Louis A. LaGarde, to the history of the School's occupancy of quarters in the Museum and Library building.<sup>2</sup>

The School, he recited, was established in 1893 in "two rooms which belonged to the Army Medical Museum, and Museum exhibits were put into the store-room to make way for the School. Each year as the institution has grown, the same encroachment on the exhibition and work rooms of the Museum has followed, and the growth of the School has been entirely at the expense of the Museum. This method \* \* \* has reached its climax, since the Museum has absolutely no more room of any sort to give it \* \* \*. As the School has grown the activities of the Museum have been more and more limited until we have arrived at a state in which something must be done."

Something was done, and on 7 June 1910, Curator Russell informed The Surgeon General, through Lt. Col. Walter D. McCaw, then the officer in charge of the Museum and Library Division, that "the Army Medical School equipment is now being moved out of this building into the building at No. 721 Thirteenth Street, N.W., which has recently been turned over to the Medical Department by the Quartermaster's Department." The move would be completed, he added, "towards the end of the present month" (fig. 49).

The move of the School relieved somewhat the space pressure on the Museum, but at the same time it created other problems. Major Russel was in charge of, and did personally much of the technical work of, both the teaching laboratory of the School and the laboratory of the Surgeon General's Office, which carried on the work of the Museum in the fields of pathology and bacteriology, including the new procedure of making typhoid vaccine. Major Russell was also on the faculty of the Army Medical School and was to be moved, with his teaching laboratory, to the new school quarters. Unless both laboratories were under the same roof, he advised The Surgeon General, it would be practically impossible for him to continue to do the work of examining water supplies, blood samples, and pathological materials required of the Surgeon General's laboratory. Authority was sought, therefore, and secured, for the removal to new quarters at the School of both laboratories, along with two experienced men to do the "considerable" clerical work.

<sup>2</sup>Letter, F. F. Russell to L. A. LaGarde, 2 February 1910. On file in historical records of AFIP.



FIGURE 49.—After 15 years of operation in the Museum building, the Army Medical School moved in 1910 to rented quarters on Louisiana Avenue.

Major Russell also recommended that a branch of the Museum be established in the new building, "since a considerable part of the specimens, exhibits, etc., of the Museum has been set aside for and are regularly used in the instruction of the classes of student officers" and it would be "impracticable to move articles of this character back and forth between the two buildings." Dr. John S. Neate, who had taken his medical degree since serving the Yellow Fever Board in Cuba and was then microscopist of the Museum, was recommended to have the custody and care of the branch.<sup>3</sup>

<sup>3</sup> Letter, F. F. Russell to The Surgeon General, 7 June 1910. On file in historical records of AFIP.

*Changes at the Museum*

On 15 October 1913, Major Russell's service as Curator of the Museum ended. His further Army service included distinguished work during the First World War in the field of preventive medicine, as head of the Division of Laboratories and Infectious Diseases of the Surgeon General's Office. In 1920, Colonel Russell, as he then was, resigned from the Army to be commissioned a brigadier general in the Medical Reserve Corps, and to become director of the International Health Board of the Rockefeller Foundation. He closed his career in medical science and administration by years of service as professor of preventive medicine at Harvard.

Succeeding Russell as Curator of the Museum was Maj. Eugene Randolph Whitmore (fig. 50). The new Curator was an academic graduate of the University of Wisconsin and had received his M.D. degree at the University of Illinois in 1899. In 1910, while on duty in the Philippines with the Board for the Study of Tropical Diseases, he had established the Pasteur Institute in Manila.

For almost two decades, during the administrations of three curators who had preceded Major Whitmore, the center of the Museum stage had been held by work in bacteriology and its related subjects of epidemiology and immunology. The resulting situation was recognized and described in a memorandum of 21 November 1913, addressed by Colonel McCaw, the officer in charge of the Museum and Library Division, to The Surgeon General of the Army.<sup>4</sup>

"The Museum feature of the Museum and Library Division of the Surgeon General's Office," he wrote, "has for many years past been almost at a standstill. While the Army Medical School occupied a large part of the present building, the energies of the Museum staff in practically all the laboratory work were expended in teaching the class and in making original investigations, principally bacteriological, into questions of great importance for the Army at large and the Medical Corps in particular. The results have been so brilliant \* \* \* that no excuse is needed for having temporarily ceased to develop the Museum feature proper—to wit, the collection, preparation and exhibition of specimens illustrating medicine in all its branches. This feature was necessarily neglected because of the preponderating importance of the brilliant work undertaken and carried out successfully."

"Many new specimens have indeed been accumulated; the Museum has been added to in some new directions and much obsolete material has been

<sup>4</sup> Memorandum, Lt. Col. W. D. McCaw, to The Surgeon General. On file in historical records of AFIP.



FIGURE 50.—Maj. Eugene R. Whitmore, eighth Curator of the Museum, 1913-1915.

taken from exhibition to give place to more valuable and up-to-date specimens. The only room in the building especially adapted to exhibition and built for that purpose is now much overcrowded and yet it contains only the pick of the collections. As space was gained by the removal of the School two large rooms were selected for exhibition purposes and promptly filled \* \* \*. In the space

gained from the School the Library also overflowed just in time to save it from being choked in its own material \* \* \*.”

As a temporary solution, or rather palliative, of the space problem, Colonel McCaw suggested the removal from the building of certain offices of the Adjutant General’s Department so that the entire building would be given over to the Medical Department—a proposition reminiscent of similar proposals of a quarter of a century earlier, when the “old red brick building” was new.

In spite of the difficulties imposed by the lack of space, and the lessened emphasis on anatomy and pathology by reason of the overshadowing achievements in bacteriology, the Museum had continued to excite interest among the professionals as well as the lay public. Calling “the attention of the profession in a general way to the advisability of more frequently resorting to this storehouse of pathology,” one Washington doctor declared that instead of the specimens being looked upon “as so much ‘embalmed beef,’ they should be regarded as treasures of great value,” to be consulted by the “earnest student of disease.” Much remained to be done to fill the gaps, however, since “many phases of many diseases are still unrepresented in this magnificent collection.”<sup>5</sup>

As seen by a visitor from Germany, Staff Surgeon Dr. Paul Ehrlich, of Giessen, the collections were described as including “many rare pathological preparations of man and the lower animals,” with “serial sections of organs displayed comprehensively between plates of glass, to give the spectator an idea of their growth and structure.”<sup>6</sup>

Dr. Ehrlich’s “lively interest” was awakened by the preparations of tropical diseases, but he found them “unfortunately bleached out by being kept in alcohol, and have lost their natural color. I called the attention of the pathologist to the methods employed in Germany (e.g., Dr. Karl Kaiserling’s method) of preserving specimens in saline solutions, which, it seems, are not generally known of in America.”

As to knowledge in America of the Kaiserling process, the German visitor was in error. Dr. Kaiserling announced his method, which included the use

<sup>5</sup> Smith, Thomas C.: The . . . Treasures of the Army Medical Museum (Presidential address delivered before the Washington Obstetrical and Gynecological Society, 6 October 1899). In American Journal of Obstetrics and Diseases of Women and Children 41: 57-63, January 1900. Although Dr. Smith’s address dealt with obstetric specimens, he declared that the “richness of the Museum” in this field applied with equal force to other branches of medical and surgical pathology.

<sup>6</sup> Ehrlich, Dr. Paul: A German View of the American Army Medical School, Library and Museum. Translated by Dr. F. H. Garrison, Assistant Librarian, Army Medical Library from the Deutsche militärärztliche Zeitschrift, July 1904, p. 396, *et seq.*

of a solution of formalin followed by alcohol, in Berlin on 8 July 1896.<sup>7</sup> The process, with some modification, was introduced into the Army Medical Museum in June 1897, and had been used for wet specimens "with much satisfaction" since that time. With the adoption of the Kaiserling method, the use of alcohol, except as part of that process, was almost entirely discontinued.<sup>8</sup>

The stature of the Museum and of its Curator, Maj. James Carroll, was recognized by the election of Carroll as the first president of the International Association of Medical Museums, a new organization whose truly international character is evidenced by the election of professors at an American, an English, and a German university as vice presidents, and of Dr. Maude E. Abbott of McGill University, a Canadian institution, as secretary-treasurer. Major Carroll was unable to attend the meeting, at which he was elected, because of illness from which he never recovered sufficiently to enable him to serve actively as president of the new association. At the second stated meeting of the Association, deep regret was expressed at the death of "one of the heroic figures in the history of this country" whose passing was a loss to the scientific world.<sup>9</sup>

### *Changes in Classification*

In the last year of Carroll's curatorship, a new classification of the Museum's materials was begun, under the direct charge of Dr. D. J. Healy, anatomist of the Museum. The new system followed closely that adopted in 1899 by the Pathological Museum of McGill University in Montreal. It superseded, largely, the system of classification which had been developed by Dr. Daniel Smith Lamb, the pathologist of the Army Medical Museum.<sup>10</sup>

The advantages claimed for the McGill system of decimal numbers to designate classes were that it followed an anatomical classification, with "the different morbid processes affecting each organ subclassified under it, general and regional pathology being provided for by cross cataloguing." In criticism of the Army Medical Museum system, submitted with deference to that Institution's general excellence, it was said that the arrangement of descriptive numbers, made up of capital and lowercase letters and numerals, which was the

<sup>7</sup> Abbott, M. E.: On the Classification of Museum Specimens. (A paper read before the Canadian Medical Association, Montreal, on 18 September 1902.) *In American Medicine*, 4 April 1903, p. 541.

<sup>8</sup> Lamb, D. S.: The Army Medical Museum—A History. *Washington Medical Annals* 15: 4, January 1916. (A paper presented before the Medical Society of Washington, 1 November 1915.)

<sup>9</sup> Bulletin Number 1, International Association of Medical Museums, Washington, D.C., 15 May 1907. The death of Major Carroll was noted in Bulletin Number 2, Washington, D.C., 15 January 1909.

<sup>10</sup> Lamb, *Washington Medical Annals*, 15 (1916), p. 14.

basis of the system, was "not systematically carried out in its application, so that it does not altogether answer the purpose for which it was intended \* \* \*. Not only is it difficult or even impossible to classify a specimen under the headings that the catalog numbers furnish, but also it is impossible to observe the numerical order in the different groups without disturbing the natural order in which the specimens should stand."<sup>11</sup>

Before the new system could be fully installed, Major Carroll died, Dr. Healy resigned, the new classification was abandoned, and the older system was reinstated by Dr. Lamb, who was made custodian as well as pathologist. Under this system, there were "collected together in one place all specimens illustrating any one disease \* \* \* the subarrangement being according to the organ involved." Under this plan, as an example, it had been possible to select in a few minutes specimens to be loaned to a Tuberculosis Congress meeting in Baltimore without having to look for specimens in "twenty or more places."<sup>12</sup>

More responsible than anyone else for the classification and cataloging of specimens was Dr. Daniel Smith Lamb (fig. 51), who joined the Museum staff as a hospital steward in 1865, took an M.D. degree from Georgetown University in 1867, while still on duty at the Museum, was appointed Acting Assistant Surgeon in 1868, served the Museum in that capacity until the rank was abolished by Congress in 1892, and then became pathologist to the Museum, and continued as such until his voluntary retirement in 1920—a total span of active service to the institution of 55 years, followed by occasional consulting assistance during the remainder of his long life of 86 years.

Dr. Lamb commenced his service at the Museum under Dr. Joseph J. Woodward and continued it under Dr. George A. Otis and Dr. David L. Huntington. In 1883, when John Shaw Billings, the great administrator and bibliographer, was put in charge of the Museum as well as the Library, Dr. Lamb became, in effect though not in name, the active Curator of the Museum's collections, and so remained under the administration of Walter Reed, whose other responsibilities absorbed so much of his time and attention that the task of keeping up the Museum's pathological collections was largely left to the pathologist.<sup>13</sup>

<sup>11</sup> Abbott, *American Medicine*, 4 April 1903, pp. 541-544.

<sup>12</sup> (1) Letter, D. S. Lamb to V. Havard. *In Lamb, D. S.: A History of the Army Medical Museum, 1862-1917*, compiled from the Official Records. Mimeographed copy in historical records of AFIP, pp. 133-135. (2) Lamb, *Washington Medical Annals*, 15 (1916), pp. 14, 15.

<sup>13</sup> (1) Callender, Maj. George R.: Doctor Lamb's Association With the Army Medical Museum. Copy of this memorial address on file in historical records of AFIP. (Hereinafter cited as Callender Address.) (2) Kober, George M., Dean of Georgetown University Medical School: Doctor Daniel Smith Lamb, A Man of Science. (An address delivered upon the occasion of Dr. Lamb's 50th anniversary as a

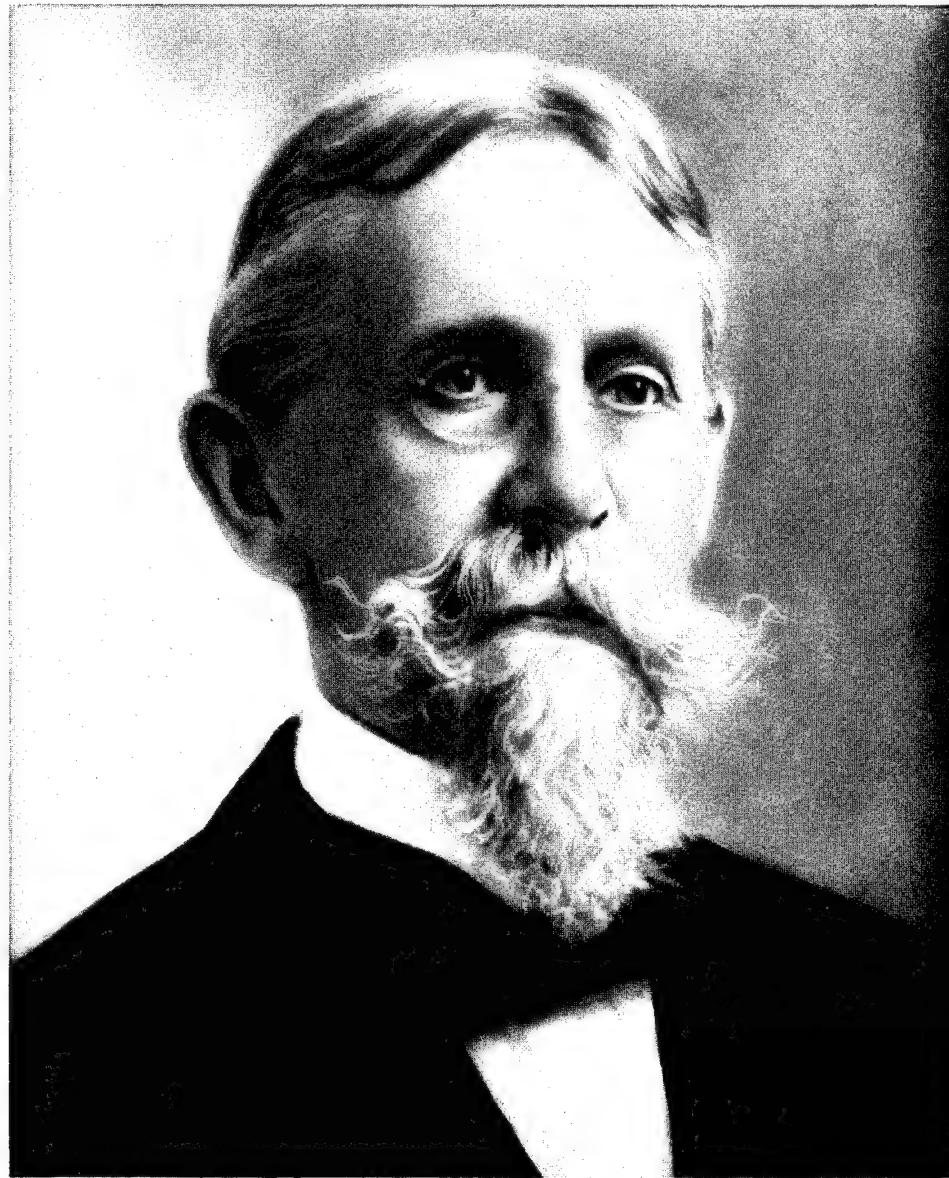


FIGURE 51.—Dr. Daniel Smith Lamb.

During the curatorship of Carroll, there seems to have been a slight change in the assignment of responsibilities in the work of the Museum. In a circular letter of 25 May 1905, the Curator informed surgeons of Washington, D.C., that

teacher in the Howard University Medical Department, 7 June 1923.) Published by the Howard University School of Medicine, 1923.

the Army Medical Museum was "now prepared to accept \* \* \* pathological specimens of interest and preserve them after the method of Kaiserling, which is intended to retain the natural coloring \* \* \*. In the absence of the Curator, any specimens turned over to Dr. Healy, the Anatomist, will be properly cared for." With reference to this circular, Lamb observed with some asperity that he, the pathologist of the Museum, had been using the Kaiserling process since 1899 "so that there was nothing really new in the circular, except the assignment of the Anatomist instead of the Pathologist to receive pathological material." The asperity was doubtless heightened by the fact that the anatomist had been on the Museum staff only 6 months, while the pathologist had already served 40 years, and had contributed more specimens to the Museum's collections "than any other has, or ever will, so contribute."<sup>14</sup>

### *The Devotion of Dr. Lamb*

The devotion of Dr. Lamb to the interest of medical science extended beyond life into death. In his last will and testament, drawn in July 1928, in the last year of his life, he left specific instructions for the performance of an autopsy, even prescribing the formula for the solution in which his brain was to be preserved for transmission to the Wilder collection at Cornell University, and directing that "such other organs as it may be desirable to preserve," including the skeleton, be "donated either to the Army Medical Museum, where I gave 54 years of service, or to the Howard University Medical School where I gave 50 years," first as professor of *materia medica*, but for 45 years as professor of anatomy. Dr. Lamb designated Maj. George R. Callender, then the Curator of the Medical Museum, to perform the autopsy, with Dr. Aleš Hrdlička of the National Museum as supervisor. Both were old and valued friends. To make the autopsy and examination of the organs more meaningful, Dr. Lamb filed with his will a complete statement of all illnesses and injuries from which he had suffered, including the "many times" he had had "infection from post-mortem examination" of which he had made "about 1,500 on nearly all diseased conditions."<sup>15</sup>

The devotion and determination of Dr. Lamb helped to keep alive an interest in anatomy and pathology in a period of 30 years after 1883, when interest in microorganisms and parasite carriers of disease overshadowed that in morbid anatomy. In the latter years of the 19th century and the opening decades of the 20th, the fields of bacteriology and related studies were filled with "ardent

<sup>14</sup> Callender Address, *op. cit.*

<sup>15</sup> Washington *Evening Star*, 22 April 1929 and New York *Times*, 23 April 1929.

workers who \* \* \* all but forgot that while parasitology is of fundamental importance, certainly interesting, and approaches the exact in science, the organisms themselves do not constitute disease but must be coordinated with morbid anatomical processes." In the prevailing neglect of morbid anatomy, Dr. Lamb retained his interest and "preserved specimens essential to the study of diseases including those caused by parasites."<sup>16</sup>

Major Whitmore was followed as Curator of the Museum on 4 August 1915, by Col. Champe Carter McCulloch, Jr. (fig. 52), who had been for 2 years previously librarian, and who combined the duties of librarian and curator until 23 June 1916, when he was succeeded as Curator by Col. William Otway Owen. Like Colonel McCulloch, the new Curator was a medical graduate of the University of Virginia. He had been retired from the Army for disability in line of duty in 1905, after 23 years of service, but in 1916 was recommissioned and assigned to duty at the Museum.

Through all changes of curators and all shifts of interest and emphasis, the collections of the Museum continued to grow. In 1906, when the abortive reclassification was undertaken, the collections numbered 34,338; 10 years later, they had grown to 47,313 specimens.

But despite growth in the absolute size of the collections, the relatively reduced interest in morbid anatomy led to a decline in status of the Museum to such a point that it came to be called by the scornful appellation of "the pickle factory"<sup>17</sup>—a name which it bore until the events and demands of the Nation's next war demonstrated once more the vital need for a repository of materials for the study of pathological anatomy, physiology, chemistry, parasitology, and bacteriology in balanced relation to the prevention, diagnosis, and cure of disease.

<sup>16</sup> Callender Address, *op. cit.*

<sup>17</sup> Dart, Brig. Gen. Raymond O.: The Pathologist's Position in the Government Services. (An address before the College of American Pathologists and the Section on Pathology of the Southern Medical Association.) Typescript copy on file in historical records of AFIP.



FIGURE 52.—Col. Champe C. McCulloch, Jr., ninth Curator of the Museum, 1915-1916.

## CHAPTER IX

# The Museum in a World at War

With the entry of the United States into what was then called simply the World War, there being as yet no need to identify such conflicts by number, there came a profound change in the affairs of the Army Medical Museum.

In his annual report for the fiscal year ending 30 June 1917—a report which reflected for the most part conditions before the declaration of war on 6 April of that year—Surgeon General William C. Gorgas noted that the Museum, with its nearly 48,000 specimens, was “one of the largest, most instructive, and valuable collections in existence.” A year later, in a report prepared at about the time the “bridge of ships” was beginning to move American combat outfits into France in significant numbers, The Surgeon General reported that in the past year the Museum had “taken on new life.”<sup>1</sup>

At first, however, the rush of preparing for a war, which was to see the size of the U.S. Army increased nearly fortyfold, seems to have bypassed the Museum and left it in a quiet backwater, with its annual appropriation for the “preservation of specimens and the preparation and purchase of new specimens” held down to the \$5 thousand-a-year figure which had come to be customary.<sup>2</sup>

“With this meager sum,” Dr. Charles H. Mayo of Rochester, Minn., said in addressing the Surgery Section of the American Medical Association, the officers in charge of the Museum had, over the years, “accomplished much,” maintaining a record of the “progress of medicine of past ages” and accumulating “many valuable historical specimens,” while materials accumulated during the war would “make the collection modern, and one of the best in the world.” These medical records of the war, he added, “will be of the greatest value, not only to the glory of medical accomplishment, but also as a means of interesting and educating the public in scientific matters pertaining to health and disease.”<sup>3</sup>

<sup>1</sup> Annual Reports of the Surgeon General, U.S. Army, to the Secretary of War, for fiscal years ending 30 June 1917, p. 325, and 1918, p. 434.

<sup>2</sup> War Department Bulletin Number 30, 22 May 1917. *In The Medical Department of the United States Army in the World War.* Washington: Government Printing Office, 1923, vol. I, p. 532. [Hereinafter cited as Medical Department History, World War I, volume I.]

<sup>3</sup> Mayo, Charles H.: Educational Possibilities of the National Medical Museum. *Journal of the American Medical Association* 73: 411-413, 9 August 1919.

The accumulations to which Dr. Mayo referred were the result of strenuous efforts to interest and instruct medical officers in the field, both in the camps at home and in the American Expeditionary Forces overseas, in the exacting work required in the proper preparation of anatomical and pathological specimens and forwarding them to the Museum in Washington. Despite such efforts, "most of the good material, and all the first-class specimens received at the Museum, with few exceptions, were brought there by men sent from the Museum to get them"—thus repeating, half a century later, the experiences of the staff of the early Museum in the Civil War.

For this, there were plenty of real reasons as well as good excuses. Summing up the situation, the eminent Dr. James Ewing of the Cornell University Medical School in New York, who is widely regarded as the "father" of oncology in the United States, and who, serving the Army as a contract surgeon in 1918, was assigned to the staff of the Medical Museum, said that this business of collecting pathological material was "one of the least urgent matters claiming attention in an army whose task was to win the war and win it quickly." A succession of epidemics, both at home and in the AEF, and the care of the wounded in the AEF overtaxed the laboratory forces and left "neither time nor force to collect suitable pathological specimens and preserve them according to modern methods." Furthermore, Dr. Ewing said, the "number of men in the American medical profession trained in the methods of the pathological laboratory, and especially in the methods of museum preparation, proved to be extremely small, and few of these were available to the army."<sup>4</sup>

### *Making Pathologists in a Hurry*

The shortage of pathologists led to a certain amount of shortcut improvisation, such as the way in which Maj. C. Judson Herrick of Grand Rapids, Mich., found himself in charge of the pathology department of the Army Medical Museum. As Dr. Herrick tells the story, he was commissioned as a major on 18 January 1918, and charged with the business of assembling personnel for assignment to Army hospitals to collect neuropathological materials for delivery, with their accompanying records, to the Museum. In April, when he had rounded up about 20 enlisted men with some training in histology and pathology, his original order was rescinded and shortly thereafter he was ordered to report for duty at the Medical Museum. Major Herrick continues:

<sup>4</sup> Ewing, James: Experiences in the Collection of Museum Material from Army Camp Hospitals. International Association of Medical Museums Bulletin VIII, December 1922, p. 27. [Hereinafter cited as Ewing.]

Upon reporting at the Museum to Col. W. O. Owen the only order I received was, "Go see Capt. Cattell." Henry W. Cattell was then in charge of pathology at the Museum. When Major Herrick reported for duty to *Captain* Cattell he was naturally disconcerted. The Captain knew that I knew very little about pathology and I knew that he knew very little about neurology. Accordingly I suggested to him that he carry on exactly as before except that he deliver to me all neurological material for processing as it came in. Shortly after my arrival at the Museum, Col. Owen said to me, "Capt. Cattell has been transferred. You will take over his space and all his duties." "Very well, Sir. You understand that I am not a pathologist." "Perhaps you weren't yesterday," Colonel Owen replied. "You are today."<sup>5</sup>

### *Dr. James Ewing's Mission*

The task of collecting suitable material and getting it to Washington in usable form was, in the opinion of Dr. Ewing, "almost insuperable," even though, in 1917, "orders had been given that all pathological materials received at camp hospitals should be sent to Washington. Under the existing conditions it was practically impossible to carry out such orders, and they fell down at nearly every point. At one time permission for the performance of autopsies was suspended, but this situation was shortly relieved by the Surgeon General's Office. Accordingly the only material from 1917 cases was sent by one or two pathologists whose attention to the needs of the museum had been specifically and urgently directed."

Failure of material to arrive from most of the camps prompted Colonel Owen to send Dr. Ewing to visit some of the cantonments in the eastern part of the United States in the early summer of 1918. "On these visits," said Dr. Ewing, "it became apparent that the laboratories had been built, equipped and manned chiefly for clinical microscopy, and not for pathology. There was always an impressive array of test tubes, Wasserman trays, blood counters, urinometers, etc., and a rather superabundant personnel trained in their use, but I found the pathologist at only one of the seven hospitals visited, and he was busily engaged as admitting officer of the hospital."

Autopsies had been performed, however, and at two camps efforts had been made to collect a local camp museum of interesting cases, but frequent transfers and changes of the acting pathologists had worked "against the effective preservation and control of material."

The "most obvious" handicap to the success of Dr. Ewing's missionary efforts was "lack of knowledge of the methods of museum preparation."<sup>6</sup> As

<sup>5</sup> Original letter, Maj. C. Judson Herrick, to Brig. Gen. Elbert De Coursey, 10 October 1953. On file in historical records of AFIP.

<sup>6</sup> Ewing, p. 28.

a means of improving this situation, The Surgeon General issued a circular letter of instructions on preparation and shipment of materials for the Museum. Before such a circular of precise and detailed instructions was issued the question of military authority for the making of post mortem examinations had to be cleared up.

### *The Autopsy Question*

In an opinion of the Acting Judge Advocate General of the Army, issued on 6 October 1917, it was held "that there can be no question but that military authority over all persons who are members of the Army of the United States is sufficient to authorize the performance of a necropsy \* \* \* if there is sound military reason therefor." But, he added, "it is not within my province to express my opinion upon the question whether such military reason exists."<sup>7</sup>

On 25 February 1918, The Surgeon General of the Army advised the War Department that while it was "impracticable to state in detail the specific circumstances which would justify post mortem examination in each case," he regarded such examinations as essential in the management of epidemics and in cases where medicolegal questions were involved, and as desirable in all cases. Even in cases where the cause of death was from well-recognized processes of disease, The Surgeon General said, an autopsy "almost invariably yields information which is instructive and of great value and importance in the treatment of the living," and that "great good to the service and [to] medical science would result" if it were "practicable to hold post-mortem examination after all deaths."

In publishing this correspondence to the medical officers, on 1 March 1918, The Surgeon General added the requirement that commanding officers of hospitals would be held responsible for the determination of the necessity for performing post mortems, for the manner in which they were performed, and for the proper preparation of the bodies thereafter, as required by Army regulations.<sup>8</sup>

The question of whether or not autopsies should be performed was dealt with again on 12 June 1918, in a circular letter from the War Department in which The Adjutant General, noting that there had been complaints that "autopsies have been held on [the] bodies of deceased soldiers in various camps and cantonments," ruled that while military authority was sufficient to authorize them, "if there be sound military reason therefor, they should not be

<sup>7</sup> Medical Department History, World War I, volume I, pp. 1020, 1021.

<sup>8</sup> *Ibid.*, p. 1021.

resorted to, unless such reason exists." Commanding officers of hospitals or the senior surgeons present were charged with responsibility for compliance with the ruling.<sup>9</sup>

On 18 June, 6 days after this promulgation from the War Department, The Surgeon General sent this further appeal for greater activity in preparing and shipping pathological specimens:

1. The Surgeon General expects that all medical officers will collect and ship pathological specimens to the Army Medical Museum, as provided in paragraph 135, Manual for the Medical Department, and in previous circulars from this office. The specimens should be accompanied by histories, and officers will receive credit for their contributions.

2. A statement is desired as to:

- (1) Whether your laboratory has already sent specimens to the museum.
- (2) Whether you have collected specimens and have them ready to ship to the museum.
- (3) Whether you have material on hand for making Kaiserling solutions.

3. Have you collected large containers for storing and shipping specimens, such as 5-gallon oil cans, crocks, and kegs?<sup>10</sup>

Apparently there was some uncertainty in the minds of the hospital commanding officers whose responsibility it was to authorize autopsies in individual cases, for on 30 September, The Surgeon General issued another circular letter which undertook to define more explicitly the "sound military reason" required for authorization of the procedure. This, said the circular, was the "same as the reason for performing an autopsy heretofore; that is, the study of the natural history of the disease in question \* \* \* even when the cause of death in that particular case is known. It is essential from a military point of view that autopsies be performed until the causes of the prevailing diseases are well understood and until suitable therapeutic and prophylactic measures have been elaborated to cure and prevent the lesions found at autopsy."<sup>11</sup>

### *Procurement of Specimens*

With the nature of the authority for making autopsies thus clarified and defined, and with the somewhat disappointing results of Dr. Ewing's mis-

<sup>9</sup> *Ibid.*, pp. 1021-1023.

<sup>10</sup> *Ibid.*, p. 1296.

<sup>11</sup> *Ibid.*, p. 1021.

sionary journey to the camps in mind, it was decided to "issue a pamphlet containing explicit directions for collecting, preserving and shipping gross anatomical material." The resulting circular, which was reviewed and revised with the help of leading pathologists, stated explicitly what material was wanted by the Museum and how it should be prepared and shipped. It was undated, but was not distributed to the hospitals whose autopsy methods it sought to improve until December 1918, after the armistice.<sup>12</sup>

In its efforts to procure suitable specimens, the Museum did not depend wholly on either this definitive circular or the earlier promulgations of The Surgeon General or the War Department. Appeals had been addressed to "many camp pathologists personally known to members of the Museum staff," and such letters had produced some results. Dr. W. G. MacCallum, of the College of Physicians and Surgeons, for example, had sent in "a large number of pneumonic lungs which formed the sole representatives of the epidemic of 1917-1918."<sup>13</sup>

At the same time, therefore, that it was seeking to enlist the interest and assistance of pathologists in the field, the pathology department of the Museum was building up and training its own staff in the work of receiving and caring for the specimens which were sought.

Dr. Daniel Smith Lamb, who had stood "as a lone sentinel guarding the interests of pathological anatomy, crowded into two small rooms, but faithfully performing his function day by day as he has been doing year by year," no longer stood alone. "With rare generosity," Dr. Ewing wrote, Dr. Lamb "placed at the disposal of the staff of new men his valuable museum collection of microscopes and laboratory utensils." More rooms were secured and were transformed into an active laboratory of pathology, a transformation due, says Dr. Ewing, to the efforts of Major Herrick, who had been so summarily metamorphosed into a general pathologist by Colonel Owen.<sup>14</sup>

In assembling and training a staff for the work in pathology, Major Herrick was fortunate in being able to use the services of some of the men whom he had previously enlisted for the Medical Department's section on brain surgery. Ten of these university-trained histologists, who had entered military service by voluntary induction for neuropathological laboratory work, were assigned to the Museum, and by the time hostilities ended were giving excellent service.

<sup>12</sup> (1) Ewing, p. 28. (2) Surgeon General's Office: Review of War Surgery and Medicine, volume 10, Number 1, December 1918, p. 72. [Hereinafter cited as Surgeon General's Office Review.]

<sup>13</sup> Ewing, p. 29.

<sup>14</sup> *Idem.*

One of the nonmedical members of the staff, detailed to Camp Wheeler, Ga., during the period of the dread epidemic of influenza in 1918, "secured through the cooperation of the pathologist at the camp hospital, most of the really good specimens of influenza lungs that were in the Museum." This man, wrote Dr. Ewing, "was permitted to remove the organs from the body and preserve them before random incisions were made. He worked over them day and night until fixation was perfect, packed them himself, rode on the wagon that carried them to the station, and saw them off on the train." With the help of such devoted members of the staff, the Museum's pathology department was, in the opinion of the eminent Dr. Ewing, "in fair working order" by the date of the armistice, with "a constant flow of materials of all grades arriving."<sup>15</sup>

### *Two Museums in One*

To take charge of the business of classifying and cataloging these accessions to the Museum, Maj. Robert Wilson Shufeldt, a retired medical officer who had served briefly on the staff of the Museum in the early 1880's while it was still housed in the Ford's Theater building, was recalled to active duty in January 1918. The major was a most prolific writer on a variety of subjects, and accordingly was charged with the additional "duty of publishing in medical and other journals of good standing articles describing those activities in the museum about which the medical profession at large and the general public may properly be informed."<sup>16</sup>

He took up his task of publicizing the problems and the accomplishments of the Museum with enthusiasm as to the future but with a critical view and a caustic pen in reference to the past. He had made known his views as to the state of the institution in an article published in October 1917, in which he declared that "from the standpoint of antiquity and history, this collection will always be of enormous value, but from the viewpoint of a growing collection and up-to-date exposition of modern medicine in all its varied departments, it has, for only too long a time, been a supreme joke."<sup>17</sup>

This opinion of the Museum, as it existed before 1917, expressed before Major Shufeldt's recall to active duty, was repeated in varied language in the articles published by him while engaged in the work of classifying and cataloging its incoming accessions. The pre-1917 museum, he wrote, "was still a

<sup>15</sup> Ewing, pp. 29, 30.

<sup>16</sup> Surgeon General's Office Review, p. 74.

<sup>17</sup> Shufeldt, R. W.: Army Medical Museums. Medical Record 92: 664, 665, 20 October 1917.

teacher, to be sure, but a teacher of the past. It exemplified, with its many thousands of specimens, our knowledge of military medicine and surgery as practiced during the Civil War \* \* \*. In the presentation of its specimens, casing, labeling, lighting and in numerous other matters and details, it is decidedly antiquated; and while it is, upon the whole, tidily kept, it is by no means an exponent of what a live, growing functional museum of the present time should be \* \* \*. It required a World War to awaken this museum \* \* \*. This somnolent institution of yore gradually came out of its lethargic state, and took on new life."

The source of this new life, according to Major Shufeldt, was the appointment to the Museum staff of several men who had had "long experience in museum affairs and management." The effect of "three or four heroic doses of vim injected into the vitals of this medical Morpheus, this sleepy old Museum" he described as "a revolution, a mild upheaval, and a readjustment with an increase in the Museum's staff in various old departments and the establishment of the new ones."<sup>18</sup>

The sharp cleavage between the "new" and the "old" museums was exemplified in the scheme of cataloging adopted by the new custodian of the collections. All specimens in the Museum at the time of the declaration of war against Germany were left undisturbed, with their accession numbers unchanged, and were designated as Series A, while items received after 6 April 1917, were accessions under new and separate numbers, designated as Series B. This maintenance, in the same museum, of two separate series of numbers for materials of essentially the same kind was deemed by Major Shufeldt to be "radically absurd," but it was adopted as a temporary measure until such time as it might be possible to revise and reclassify the older materials accumulated over a period of more than half a century. When the time should come to merge all the exhibition materials into "one homogeneous collection," he felt that "no small part" of the Series A materials would have to be set aside and that all of it would be reclassified along "divisional lines \* \* \* very differently drawn. Science will take a hand in the arrangement, and by the application of true principles of museology, material will be exhibited in an orderly and scientific manner—properly cased, labeled, and classified \* \* \*."<sup>19</sup>

<sup>18</sup> Shufeldt, R. W.: Value of the Army Medical Museum as a Teaching Factor. Proceedings of the American Association of Museums, 1918, p. 209.

<sup>19</sup> Shufeldt, R. W.: On the Classification Adopted for the Material Constituting the Collections in the Army Medical Museum of the Surgeon General's Office at Washington. Medical Review of Reviews 24: 728, December 1918.

### *Launching the Movement for a New Building*

This future reclassification, it was hoped, would be made in a new building for the Museum and the Library, which Colonel Owen (fig. 53) had proposed, first to The Surgeon General in 1916, and later to the medical profession at large in an article published in the *New York Medical Journal*.<sup>20</sup>

The time seemed ripe for such a project when it was launched. A special Public Buildings Commission had been set up pursuant to a 1916 Act of Congress, to "ascertain what public buildings are needed to provide permanent quarters for all the government activities in the District of Columbia." This Commission, reporting in December 1917, included in its plans a site on the south side of the Mall between 4½ and 6th Streets, SW., for a building of 175,000 square-feet capacity, to house the Museum and the Library. Cost estimates for building and ground ranged from \$2½ to \$4 million. Preliminary plans for such a building, of classical design, were approved by the Fine Arts Commission as part of the move for a more beautiful Capital City.

The zeal of Major Shufeldt, seconded by Colonel Owen, led the major to write letters to the deans of the principal medical schools of the country; to state, county, and city medical societies; and to individual physicians and surgeons of prominence, soliciting their endorsement of the plan to provide, without delay, suitable quarters for housing the materials to be collected on the battlefields of Europe. With his letters, which went out in February and March 1918, he sent reprints of an article from his pen, published in the *Medical Record* of 2 February, in which he described the existing Museum as a "mummy" stagnating in its "sarcophagus" but retaining still the "essential life spark" which made possible "revivification" and future usefulness.<sup>21</sup>

The response to his letters was gratifying to him. The plan was endorsed by more than a score of medical college deans and faculties, a like number of medical societies, and three times as many individual practitioners, including some of the leaders in the medical world, representing in Major Shufeldt's somewhat overly optimistic opinion, "the voice of practically all the profession in America." The letters were bound in a handsome volume placed on the desk of The Surgeon General, and were reproduced for wider circulation.<sup>22</sup>

The new building was part of Colonel Owen's dream of the Museum of the future, which should be not "merely a collection of medical history of the United

<sup>20</sup> Owen, W. O.: The Army Medical Museum. *New York Medical Journal* 107: 1034-1036, 1 June 1918.

<sup>21</sup> Shufeldt, R. W.: War Material at the Army Medical Museum. *Medical Record* 93: 180, 2 February 1918.

<sup>22</sup> (1) Mimeographed copies of letters on file in historical records of AFIP. (2) Shufeldt, R. W.: The New Army Medical Museum on the Map. *Medical Review of Reviews* 24: 596-599, October 1918.



FIGURE 53.—Col. William O. Owen, tenth Curator of the Museum, 1916-1919.

States but should also be a teaching center in the truest sense \* \* \* housed in a building with a dignity commensurate with the service to be demanded of it."

"The Museum of 1861-1865, and later," he said, "was all that could have been hoped for in that day. I am trying to make preparation for the study of medical material of this war upon a modern, scientific basis \* \* \*. I do not

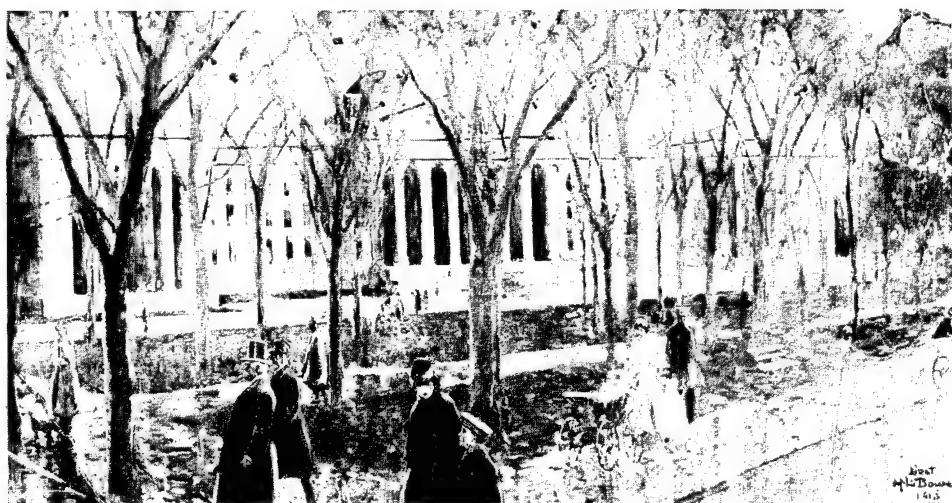


FIGURE 54.—Colonel Owen's "dream" of a new Museum and Library building, as pictured by Lt. Morris L. Bower, October 1918.

believe that a mere collection of anatomical and pathological curiosities for exhibit to the curious and the prurient should be permitted. A medical museum should be, in my judgment, a great library of history and pathology, where the student of medicine may come and study the history of disease and its pathology, for the benefit of himself, his patients, and his nation.”<sup>23</sup>

With a war to be won, however, and with money, materials, and manpower in short supply, the time was not propitious for the construction of new permanent buildings in Washington, and the project for a new home for the Museum joined the other deferred dreams—not to be realized for yet another 40 years, and then in an entirely different form and at a different place from the proposals of 1918 (fig. 54).

The unrealized dream of a new building, however, in no way diminished the drive of the Museum in expanding its activities to meet the demands of the war of 1917–18. “The present war,” said Major Shufeldt, “has had the effect of waking up the old-time spirit in this erstwhile slumbering institution \* \* \*. It is now an active medical concern, reaching out in all directions and absorbing every possible means to become a medical research and teaching center in the broadest sense of those words.”<sup>24</sup>

<sup>23</sup> Owen, *New York Medical Journal*, 107 (1918), p. 1036.

<sup>24</sup> Shufeldt, R. W.: Vertebrate Types Below Man in the Collections of the Army Medical Museum. *Medical Review of Reviews* 24: 274, May 1918.

### *Applying the Graphic Arts to Medicine*

One of the new directions in which the Museum was "reaching out" in the war years of 1917 and 1918 was in the extension of its informational services through the wider use of the graphic arts—photographic, pictorial, and plastic.

Medical illustration in the Armed Forces of the United States was not something new in 1917. It had been developed during the Civil War period, when the Museum staff included such medical artists as Hermann Faber and Edward Stauch, and such clinical photographers as William Bell and E. J. Ward, whose graphic plates are vividly reproduced in the "Medical and Surgical History of the War of the Rebellion," in addition to Doctors Joseph J. Woodward and Edward Curtis, who pioneered in photomicrography. The tradition of these pioneers had been carried on by Dr. William M. Gray in photomicrography, and by Dr. J. C. McConnell whose careful drawings of mosquitoes were useful in the practical application to mosquito control of Walter Reed's discovery (fig. 55).

The World War I counterpart of these earlier illustration services was called the Instruction Laboratory of the Medical Museum, a name bestowed to distinguish it from the division of the Museum devoted to work in pathology.

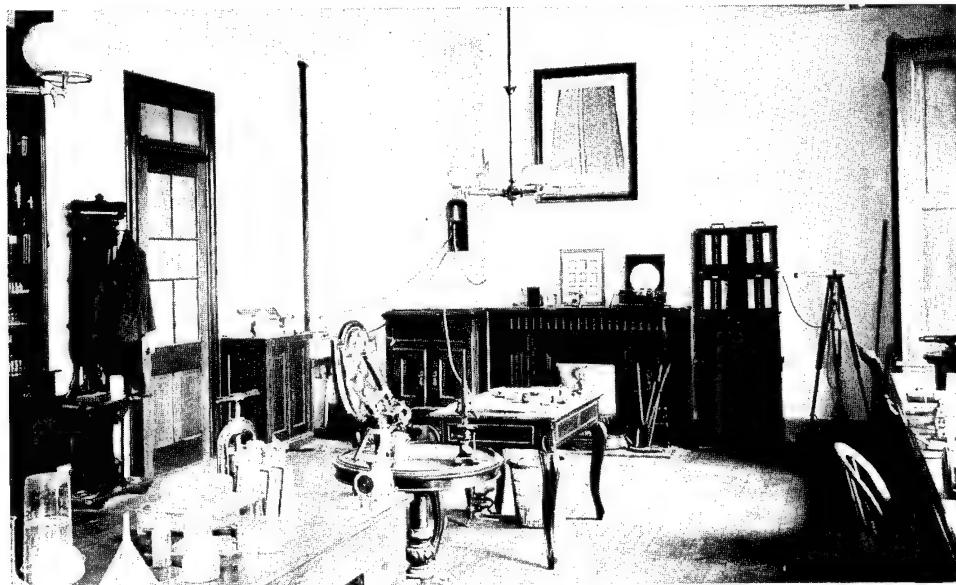


FIGURE 55.—This laboratory of the nineties was that of Dr. William M. Gray, who carried on the tradition of achievement in photomicrography established by Dr. Woodward and Dr. Curtis.

The development of the new services may be dated from the employment, in June 1917, of Roy M. Reeve as photographer—an employment which was the beginning of a career of nearly four decades in the graphic depiction of military medicine by the use of the camera.<sup>25</sup>

In November 1917, Lt. Thomas L. W. Evans, head of a New York firm of "commercial cinematographers" and a man of experience in the then young motion-picture industry, was put in charge of the new Instruction Laboratory (fig. 56). The operations of the Laboratory grew to include Mr. Reeve's section of still photography; a section of motion pictures, headed at first by Lt. Robert Ross and later, after Lieutenant Ross had gone to France, by Lt. Charles W. Wallach; an anatomical art service headed at first by Lt. William T. Schwarz, then by Lt. Morris L. Bower, and at the end of the war by Lt. Raymond O. Ellis; and a section of wax modeling under Capt. James Frank Wallis.<sup>26</sup>

Through these various graphic methods the Instruction Laboratory sought to reach and inform a threefold audience—troops in training, medical officers, and the civilian world, including especially civilian medical men.

### *Motion Pictures*

A major activity of the Laboratory was the production, reproduction, and distribution of motion-picture films. Altogether, 137 such films, including both those produced by the Laboratory and those produced by other organizations and distributed by it, were listed as available for showing in camps and cantonments and through civilian outlets.<sup>27</sup>

The films offered for showing to the various "publics" ranged in length from one-half reel to a nine-reel production on the diagnosis of tuberculosis. The picture most widely shown and frequently discussed was a four-reeler, "Fit to Fight," described as a "venereal disease photo play" which in three reels of dramatic action told a story and, in one reel showing clinical consequences, pointed a moral (fig. 57).

"Fit to Fight" was designed primarily for showing in the training camps but was also shown, in a somewhat revised form, to selected civilian audiences. Such showings were arranged by the Commission on Training Camp Activities, by local departments of health and police authorities, by major industries, and by the U.S. Public Health Service, among others.

<sup>25</sup> Creer, Ralph P.: Medical Illustration in the United States Army; Historical and Present Considerations. *Journal of Laboratory and Clinical Medicine* 28: 651-661, February 1943.

<sup>26</sup> Memorandum, Colonel Owen to Lieutenant Colonel Fulton, 25 October 1918. On file in historical records of AFIP: Evans, Ross, and Schwarz.

<sup>27</sup> Medical Department History, World War I, volume I, p. 515.

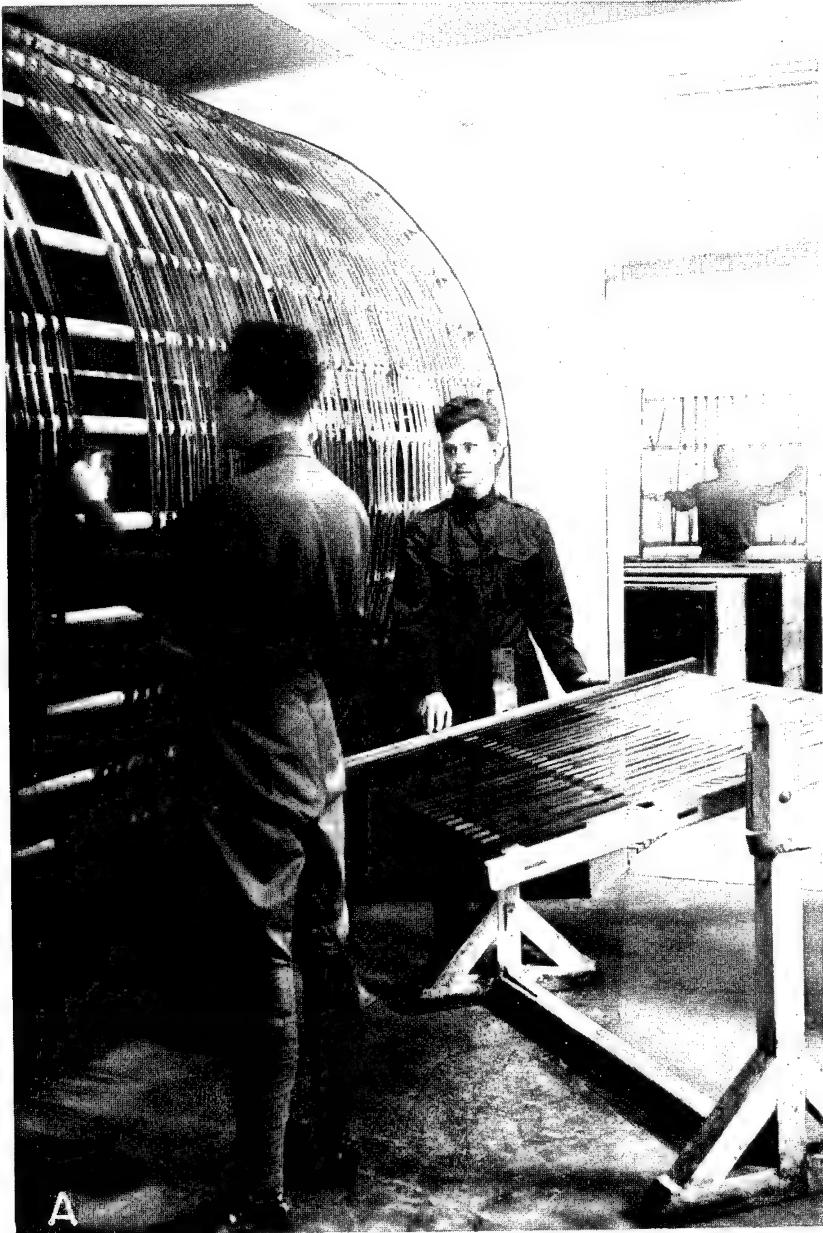
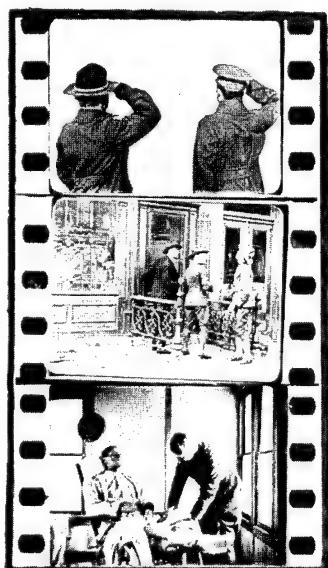


FIGURE 56.—Instruction Laboratory, World War I. A. Drying racks for motion-picture film.



FIGURE 56.—Continued. B. Cutting and polishing room for motion pictures.

## SOUND EDUCATION AND WARNING



The motion picture  
“FIT TO FIGHT”  
tells the story of  
Venereal Disease  
*and*  
its results.



FIGURE 57.—The best known and most controversial production of the Instruction Laboratory was the film dealing with venereal disease.

The film was shown before the convention of Rotary International held in Kansas City in late June 1918, with the result that many of the constituent clubs arranged meetings at which the film was shown in their communities, usually for men and boys over 16.

A typical example of such showings and the reaction to them is the experience of the Rotary Club of Dallas, Tex. Showings were first planned for September or early October, but the spread of the appalling influenza epidemic in city, country, and camps brought a ban on public gatherings and forced postponement until late November. The reaction to the film when finally shown is thus described in a report from W. C. Temple, secretary of the Dallas Rotary Club, upon returning the film to the Army Medical Museum:<sup>28</sup>

The first showing, by invitation only, was made to about one hundred and fifty men. We did this to feel out the local situation, and after those invited had witnessed the film, they were unanimous in their opinion that it should be shown to as many males as possible, so we gave another showing of the picture, giving the matter publicity through the local press, at which time the film was shown to something like two thousand men and boys over fifteen years of age \* \* \*. In my opinion this is just such education work as should be carried on throughout this country.

### *Pictures as Training Methods*

Most of the motion pictures made by the Instruction Laboratory, however, were of an instructional nature, as the name of the organization implied, and were aimed at perfecting procedures and standardizing training methods. For example, Colonel Owen corresponded with both Brig. Gen. H. P. Birmingham, in command of the great Medical Officers Training Center at Camp Greenleaf, Fort Oglethorpe, Ga., and Col. W. N. Bispham, commanding the Medical Officers Training Camp at Fort Riley, Kans., advising them of the availability of moving-picture production crews at the Museum and inquiring as to the desirability of having them make pictures of such training features as an ambulance company or a field hospital breaking camp, moving on the road, setting up a dressing station or a field hospital, bringing in and caring for the wounded, and making camp.

Colonel Bispham responded with a letter approving the project, and on 1 May 1918, wired Colonel Owen asking for a man to make the pictures about the middle of that month. Lt. Robert Ross was sent to Fort Riley where, despite weather and lighting difficulties, he shot a satisfactory picture which was completed by mid-June.<sup>29</sup>

<sup>28</sup> Letters, 11 October and 29 November 1918. On file in historical records of AFIP.

<sup>29</sup> Correspondence between Colonel Owen and Colonel Bispham. On file in historical records of AFIP.

Meanwhile, in May 1918, Colonel Owen received a reply from General Birmingham in which he agreed that the moving picture suggested would be of "great value in giving ideal demonstration and the technically correct methods of foot drill, litter drill, with the loaded and unloaded litter, as well as the use of improvised litters and the handling of the wounded without any apparatus whatsoever, ambulance drill, Field Hospital dress, tent drill, gas defense, first-aid, principally dressings and splints, sanitation in camp and in the field, surgery and surgical treatment under field conditions, principally operating and preparation of patients and materials for same, the giving of hypodermic injections, and the use of the catheter."

To this thoughtful letter Colonel Owen replied immediately, saying that the pictures covering base, evacuation, and field hospitals, and ambulance companies were being made at Fort Riley, but that the other subjects referred to in the general's letter would be made at Camp Greenleaf whenever the troops which it was intended to photograph would be ready for the shooting of the pictures.<sup>30</sup>

Among the most successful and valuable of the films produced by the forces of the Instruction Laboratory at the camps, and with the aid of the Medical Department, was "Training the Medical Officer," directed at the thousands of new medical officers taken from civilian life and passing through the medical officers training courses.

Two films directed at the practical matter of insect control, and reflecting the longtime preoccupation of the Museum with entomology, were "Mosquito Eradication" and "Fighting the Cootie." Each U.S. military post had received directions from The Surgeon General to collect mosquitoes in its vicinity, and to forward the specimens collected to the Medical Museum for identification.<sup>31</sup>

At the Museum, the mosquitoes—and other insect carriers of disease as well—were examined by the Museum's entomologist, Dr. Clara S. Ludlow, whose distinction in the field is indicated by the fact that two strains of anopheles mosquitoes bear her name as *A. ludlowi*. Identification of the mosquitoes, together with any information that might be useful in controlling the pests, was reported to the surgeon at the post from which the specimen was received. Compliance with the order was far from universal, and was not always in conformity with the directions for collecting and forwarding the specimens. "Fleas,

<sup>30</sup> Correspondence between Colonel Owen and General Birmingham. On file in historical records of AFIP.

<sup>31</sup> Directions for Collecting and Forwarding Mosquitoes, Office of the Surgeon General, 21 March 1918. Copy on file in historical records of AFIP.

lice, ticks and bedbugs" were asked for in one instance, but somehow only cockroaches and flies were received, while from some posts nothing at all came in, but enough specimens were received to keep the entomology staff of the Museum busy in identifying them and making recommendations for their eradication or control.<sup>32</sup>

### *Use of Animated Drawings*

Among the films prepared by the Museum's force were several made with what was described as "stop-motion pictures," producing the effect of animated drawings in which every step in an operation was reproduced by sketches. "The knife appears, without any hands, goes to the proper position and makes the proper incision; the retractors appear, holding the wound apart. The needle appears, armed with the thread, goes to the right place, puts the suture in the right position; the suture rises up and ties itself and sloughs off its own ends. Purely impersonal surgery, the patient being impersonal likewise \* \* \* as the schematized operation proceeds, legends are thrown upon the screen explaining the steps and pointing out the names of the essential structures as they are successively exposed to view during the operation"—this being just before the day of the motion picture with sound.<sup>33</sup>

One of the skilled artists who worked on the production of animated pictures was Sgt. (afterward Lt.) Paul H. Terry who, upon his discharge after the armistice, opened an office in New York for the production of cartoon comedies and, in time, originated the famous "Terrytoons," to the delight of millions.<sup>34</sup>

A third branch of the Instruction Laboratory, the Anatomical Art Department, grew out of this work of making sketches in series for use in animated cartoon moving pictures, in which the artists were at first largely engaged. In the spring of 1918, however, the brush and pencil came to be independent of the camera, with the issuance of an attractive announcement, designed by Sgt. V. B. Sisson, of "the establishment of an official department [in the Army Medical Museum] for the handling of such surgical and anatomical illustration as is required in the activities of the United States Army Medical Corps" (fig. 58).<sup>35</sup>

<sup>32</sup> Letter, Dr. Ludlow to Curator, Army Medical Museum, 21 August 1922. On file in historical records of AFIP.

<sup>33</sup> Surgeon General's Office Review, p. 70.

<sup>34</sup> Letters, Lieutenant Evans to Lieutenant Ross, 4 September 1919 and Lieutenant Ross to Colonel Owen, 18 December 1918. On file in historical records of AFIP.

<sup>35</sup> Shufeldt, R. W.: The Art Department of the Army Medical Museum. Medical Review of Reviews 24: 391, July 1918.



ANNOUNCING  
THE ESTABLISHMENT OF AN  
OFFICIAL DEPARTMENT FOR  
THE HANDLING OF SUCH †  
SURGICAL AND ANATOMICAL  
ILLUSTRATION AS IS REQUIR-  
ED IN THE ACTIVITIES OF THE  
UNITED STATES ARMY MEDICAL  
CORPS † † † † † † † † †  
ANATOMICAL ART DEPT.  
IN THE  
ARMY MEDICAL MUSEUM

FIGURE 58.—The Museum offers its services to those requiring assistance  
in the development of illustrative medical art.

In charge of the Anatomical Art Department was Lt. William T. Schwarz, who had had 5 years of experience in medical illustration at Syracuse University, topped off by 2 years of study in Europe. He was assisted by Lt. Morris L. Bower, who was to become well known as a magazine illustrator. Both officers received further training in the spring of 1918, under Prof. Max Brödel at Johns Hopkins. They and others added to the staff, which by May came to number a dozen artists, were given training in medical art on the job (fig. 59). This training



FIGURE 59.—Headquarters for medical art in the Army Medical Museum, World War I, with staff members dutifully posing for the photographer.

included dissecting experience on cadavers in a dissecting room set up in the Museum.<sup>36</sup> Additional experience was had in the making of a large number of drawings illustrating various stages in surgical operations at the Walter Reed General Hospital and elsewhere, and participation in performing numerous autopsies at the Government Hospital for the Insane (St. Elizabeths), in Washington, D.C., where the pathological service had been taken over for instruction purposes by the Museum.<sup>37</sup>

The output of the Museum's staff of artists found use in the program of medical instruction of officers and men in the training camps, in the shape of lantern slides, for projection on the screen, to illustrate lectures on medical topics. Through these lectures, declared Major Shufeldt, the fitness and health of the army was "vastly improved." This was probably an exaggerated estimate of the effectiveness of these educational efforts,<sup>38</sup> but there can be no doubt that the

<sup>36</sup> (1) Letter, Lieutenant Schwarz to Dean John Heffern, Syracuse University, 28 May 1918. On file in historical records of AFIP. (2) Shufeldt, *Medical Review of Reviews*, 24 (1918), pp. 391, 392.

<sup>37</sup> (1) Annual Report of the Surgeon General, U.S. Army, fiscal year 1919, p. 1066. (2) Surgeon General's Office Review, p. 72.

<sup>38</sup> Shufeldt, *Medical Review of Reviews*, 24 (1918), p. 392.

attempt to add to the medical knowledge of officers and men through anatomically accurate medical art helped to make the army of 1917-18 the first in United States history in which deaths from disease were fewer than those from battlefield casualties (fig. 60).

A separately organized branch of medical art in the Instruction Laboratory dealt with making casts and wax models of the lesions of wounds and disease. Capt. James Frank Wallis, a Washington dermatologist and an experienced modeler in wax, was in charge of the work and was assisted by Miss Eleanor Courtenay Allen of Milwaukee, who had studied at the Chicago Art Institute, and who joined the Museum staff in March 1918.<sup>39</sup>

The Museum had had for many years a collection of several hundred wax models, for the most part produced by the famous Baretta studios in Paris, and part of the work of the new division was to rehabilitate some of the French models which had deteriorated from prolonged exposure to direct sunlight.

### *The Museum Goes Abroad*

With all the new developments and extensions of the service of the Museum in the United States, the goal of the organization was to be of service overseas, whether in pathology, photography, or anatomical art. First steps to that end were taken in January 1918, when The Surgeon General at home sought from the Chief Surgeon overseas authorization to send over a medical museum unit.<sup>40</sup>

The oversea work of the Museum was to be in charge of Maj. (afterward Col.) Louis B. Wilson, in civil life pathologist and director of laboratories for the Mayo medical organization at Rochester, Minn. Dr. Wilson was ordered to England—first to study what was being done along the line of collecting specimens in the British and Colonial Forces, and then to France for duty with the AEF as an assistant director of the Division of Laboratories.

In England, where he spent the last 3 weeks of April, Major Wilson conferred with Sir Walter Morley Fletcher, secretary of the National Research Committee; Prof. Arthur Keith of the Royal College of Surgeons; and Lt. Col. J. C. Adami, in charge of the historical bureau of the Canadian Medical Corps, with reference to methods of collecting pathological specimens. He talked also with officers in charge of military orthopedics, concerning casts, models, paintings, and drawings; with officers in charge of the cinema service; and with those in charge of the indexing and filing of medical records and their

<sup>39</sup> Shufeldt, R. W.: Wax Modeling Department of the Army Medical Museum. *Medical Record* 94: 663, 19 October 1918.

<sup>40</sup> Wilson, L. B.: Museum and Art Service of the American Expeditionary Forces. *The Military Surgeon* 46: 165, February 1920.

statistical use. On 1 May 1918, he reported to Colonel Owen on his stay in London, with a separate memorandum covering each subject discussed, and proceeded on to France.<sup>41</sup>

Before Major Wilson's arrival in France, the then Chief Surgeon of the AEF, Brig. Gen. A. E. Bradley, had issued Circular No. 17, 2 April 1918, "Instruction Concerning Autopsies," in which the attention of medical officers was called to the importance of the post mortem examinations and under which Major Wilson was to build up the necropsy service in the AEF. The circular, issued in order to "secure proper records of causes of death of American troops in France, and specimens of scientific value for the Army Medical Museum," gave directions as to procedures in autopsies, which "should be performed whenever possible." With this encouragement to the adoption of the autopsy as a routine procedure, to be done as a matter of course in all cases rather than as a special procedure to be done only on express authorization, the number of autopsies performed in the AEF rose from less than 25 percent of all deaths in hospitals, which it had been in 1917, to 57 percent in the early months of 1918, and 92 percent in August and September. It held up to 85 percent even in the peak month of the influenza epidemic, October 1918, when the laboratory facilities and staffs, like every other hospital facility, were "overwhelmed by the enormous number of deaths from influenza and the battle casualties of the Argonne offensive."<sup>42</sup>

### *Necropsy Service in the AEF*

Writing shortly after the event, Colonel Wilson pointed out that in May 1918 there were, in the AEF to serve 72 hospitals and laboratories, but "fifteen pathologists capable of making post-mortems and intelligently interpreting the results"—a condition due in part to the "long neglect of autopsies in many civil institutions in the United States" and in part to the "overshadowing status of bacteriology in military laboratories." He continued:

The autopsy service in the Army in the United States had not been established as a routine procedure, but, on the contrary, autopsies were made only on the written authority of the commanding officer of the hospital. However, in the A.E.F. the need of a routine autopsy service, amounting in fact to professional inspection of the diagnostic and thera-

<sup>41</sup> Letter, Maj. L. B. Wilson to Col. W. O. Owen, 1 May 1918, with eleven memoranda attached. On file in historical records of AFIP.

<sup>42</sup> (1) Wilson, L. B.: The Pathologic Service of the American Expeditionary Force. *The Military Surgeon* 45: 700, 702, December 1919. (2) Medical Department History, World War I, volume II, pp. 918-919.



FIGURE 60.—Samples of scenes and messages from lantern slide sets developed for instructional use by the Army Medical Museum, using material furnished by the Office of the Surgeon General.

apeutic measures of medical and surgical officers, became rapidly apparent during the summer of 1918. Surgeons were called upon to diagnose and treat, with little time for study or reflection, many gunshot wounds with the like of which they had little or no previous experience. Even those who were well grounded in the general principles of surgery were

forced to make decisions and institute treatment thereon without sufficient basis or study. As a result, there were errors in diagnosis and errors in treatment. The worst of these could be determined only by the pathologist. In like manner, attending medical officers, e.g., in cases of war gas poisoning and especially in the widespread epidemic of influenza and pneumonia, were brought face to face with conditions with which they were totally unfamiliar, and were frequently forced to make diagnoses and institute treatment with a very meager knowledge of the facts. Here autopsies were of tremendous importance in securing for the attending man a knowledge of the pathologic lesions, which knowledge he could use in his diagnosis and treatment of subsequent cases.<sup>43</sup>

The Director of the Division of Laboratories, AEF, Col. Joseph F. Siler, requested in June 1918, that 10 competent pathologists be cabled for from the United States, in addition to those coming over with organized hospital units. The needed pathologists, or rather eight of them, came over in due course and, with their help, centers for pathologic service were established at Baccarat, Toul, Souilly, and Paris, staffed by medical officers who acted as consultants in pathology for the surrounding areas.<sup>44</sup>

Less successful was the request, made in May, for a museum unit of photographers and artists to be sent to France. This request was approved by General Bradley, Chief Surgeon of the AEF, but was turned down by the General Staff, AEF, "in view of the existing tonnage situation," and because it was believed that the "requirements of the Medical Corps could be met successfully in this particular by the personnel and facilities already available, in both the Signal and Engineer Corps."<sup>45</sup>

The interests of the Museum were not forgotten, however, for on 27 July 1918, Brig. Gen. Merritt W. Ireland, who had succeeded General Bradley as Chief Surgeon upon his retirement for disability, issued Circular No. 42 "for the information of those branches of the service whose cooperation and assistance are necessary to enable the Army Medical Museum to discharge its duty of collecting all those things which may be used for medical education and research, or which may be of historic interest."

Circular No. 42 noted the responsibility of all medical officers to direct into proper channels all desirable material coming to their notice; stressed the duty of the pathologist in each unit to collect, preserve, and ship all such

<sup>43</sup> Wilson, *The Military Surgeon*, 45 (1919), p. 701.

<sup>44</sup> (1) *Ibid.*, pp. 701-702. (2) Letter, Maj. L. B. Wilson to Col. W. O. Owen, 5 October 1918. On file in historical records of AFIP.

<sup>45</sup> (1) Letter, Commander in Chief, G-1, to Commanding General, Services of Supply, 4 June 1918. On file in historical records of AFIP. (2) Medical Department History, World War I, volume II, p. 222.

material as was obtainable; and gave detailed directions for the fixation and preservation of pathological specimens.

The circular covered a broad field, including microscopic materials as well as gross organs and tissues; such pathogenic bacteria as might be isolated in the American Expeditionary Forces; specimens of animal parasites, preferably alive; helmets and other bodily protections; instruments and apparatus; and paintings, drawings, and diagrams of medical interest.

"For the psychic effect, a missile removed from the body of a wounded soldier may be given to him if he wishes to keep it," said the circular in paragraph 12. In view, however, of the desirability of securing such material for the Museum, the hope was expressed that when the scientific value of the comparative study of such missiles was explained to them, soldiers might be induced to give up these intensely personal souvenirs of service.

### *Medical Photography in the AEF*

Reference was also made in the circular to General Orders No. 78, General Headquarters, AEF, dated 25 May 1918, in which the earlier prohibition against the use of cameras by anyone other than the Signal Corps was liberalized, and the Medical Department was given responsibility for "technical photography connected with the recording of photographic processes of surgical and pathological matters."<sup>46</sup> The change in the orders as to the use of cameras had little immediate effect. Only a few of the medical units in France had qualified medical photographers in their ranks. Because of the earlier ban on making photographs, still fewer units had suitable cameras among those which had been brought over in spite of the bar to their use. These were put to work; a few others were secured from the French; 3 were borrowed from the Signal Corps; and 24 were secured from the X-ray Department of the Medical Corps itself. This was enough to make a start on the business of securing a photographic record for information and study.<sup>47</sup>

Whether because of the relaxation of restrictions upon non-Signal Corps photography, or because of some easing of the ship-tonnage situation, or because of an increasing recognition of the value and importance of the Museum's program, or because of a combination of all three, the ban on Museum Unit No. 1 getting to France was lifted.

This was done in Courier Cablegram No. 7, 20 July 1918, from the Com-

<sup>46</sup> *Ibid.*, pp. 961-964.

<sup>47</sup> (1) *Ibid.*, pp. 222-223. (2) Wilson, *The Military Surgeon*, 46 (1920), pp. 165-168.

manding General, AEF, to The Adjutant General of the Army. Paragraph 2 of this message read:

Request that the Museum Unit, one Cinema Camerist, one photographer and four artists with complete equipment and adequate supplies for at least six months be sent to France. Item M 941 K. Consult Curator Army Medical Museum.<sup>48</sup>

It was the end of August before the unit asked for could be assembled and dispatched overseas, but by the middle of September, two groups sent from the United States arrived in France. Captain Ross and seven photographers reported to the headquarters of the Division of Laboratories, then at Dijon, and Lieutenant Schwarz, Lt. W. H. French, and Miss Allen, illustrators and modelers, who had come over attached to Base Hospital No. 115, were stationed at the hospital center in Vichy.<sup>49</sup>

Before the General Staff, AEF, allowed Major Wilson to ask for talent from the United States, he had "managed to scrape up in the Base Hospitals some fifteen to twenty men who had had more or less training in medical illustration," as he wrote Colonel Owen, on 5 October 1918. "A few of these," he continued, "such as Coleman and Jarrett, of whom you wrote, are good Brödel-trained artists. Most of them have been landscape painters, interior decorators or white-wash brush artists. A few of them we will be able to train to do fairly good work. I propose to do this by ordering them to Vichy, where Schwarz, French and Miss Allen will be permanently stationed."

As to the photographic work, Major Wilson wrote Colonel Owen that "a number of units" had come to France with "fairly good amateur photographers" but that most of them, "having nothing to do, had been put into work entirely foreign to photography" and "had to be blasted loose by slow and diplomatic methods. Some are still grown fast to non-photographic jobs but we are slowly getting the work in operation."

Colonel Owen was intensely interested in the use of moving pictures for instruction purposes and doubtless had impressed his views upon Major Wilson. It must have been with some degree of disappointment, then, that the major reported, "up to date I have not been able to arouse any interest whatsoever in moving pictures in the Medical Department of the A.E.F. \* \* \*. Most of the surgeons say they do not see any value in moving pictures of surgical operations except to advertise the operator and that they do not want them taken \* \* \*. However, I am very far from disheartened, especially since

<sup>48</sup> Copy of cablegram, on file in historical records of AFIP.

<sup>49</sup> Medical Department History, World War I, volume II, pp. 224, 225.

Captain Ross and other motion picture men have arrived and believe that before long this side of the work will be going satisfactorily.”<sup>50</sup>

Today’s acceptance of moving pictures of operations as a familiar procedure in medical training has vindicated the interest taken in this technique by Colonel Owen and Major Wilson. Such pictures are shown as part of modern medical training, and have even made their appearance on television. They still inescapably “advertise the operator,” but this minor objection is more than counterbalanced by the greater facility with which the observer can see and understand what is done as it is done.

By the end of September, the photographers were at work in the zone of the advance, covering the activities of the divisions at the front. With the signing of the armistice of 11 November 1918, and the cessation of hostilities, the Museum staff was concentrated at Dijon until 29 November, when Captain Ross, with three photographers, was ordered to Paris to set up a photographic bureau for the Medical Department of the AEF. The bureau was housed in the Elysee Palace Hotel, where three large bathrooms were converted into photographic darkrooms.<sup>51</sup>

Despite difficulties and delays in securing sufficient supplies, some of which had to be procured from the French, the photographic staff made, captioned, filed, and cross-indexed about 10,000 still photographs and turned out some 40,000 feet of motion-picture film showing medical and surgical activities around the hospitals, in addition to prints of 20,000 feet of film made by the Signal Corps. In the same period, the artists and modelers produced 35 casts of surgical subjects, about 200 drawings and paintings, and 1,000 photographs of technical subjects.<sup>52</sup>

Lieutenant Schwarz conceived the idea of making life masks of the principal figures at the Peace Conference then in session. Working with Miss Allen, he made a “bully mask” of Ambassador Sharp, who put him in touch with Col. E. M. House who, in turn, introduced the lieutenant to M. André Tardieu, the French High Commissioner for Franco-American affairs, whose mask was also made. Through M. Tardieu, Lieutenant Schwarz was presented to Marshal Joseph J. C. Joffre, who consented to have his mask taken on the evening of 7 January 1919, and who made arrangements for the taking of a mask of Marshal Ferdinand Foch on 9 January, and of President Raymond Poincaré

<sup>50</sup> Letter, Maj. L. B. Wilson to Col. W. O. Owen, 5 October 1918. On file in historical records of AFIP.

<sup>51</sup> Memorandum, Maj. Robert Ross, 17 April 1919. On file in historical records of AFIP.

<sup>52</sup> (1) Medical Department History, World War I, volume II, p. 225. (2) Wilson, *The Military Surgeon*, 46 (1920), p. 172.

and Premier Georges E. B. Clemenceau on the 10th. King Albert of Belgium was slated to have his mask taken on 13 or 15 January, while Field Marshal Douglas Haig, Prime Minister David Lloyd George, and Mr. Herbert H. Asquith were to be taken sometime between the 13th and 17th of the month. Whether any more of the masks were made, and what became of those which were, does not appear in the Armed Forces Institute of Pathology files other than the statement of Major Ross, in a letter of 21 January 1919, to Colonel Owen that he understood that Lieutenant Schwarz had "been pulled off the plaster masks proposition and it was turned over to an officer of higher rank to handle."<sup>53</sup>

### *The Museum's Major Aim*

The major aim of the Museum was not, however, in the making of life masks of notables, nor in graphic presentation of Medical Department activities, nor even in the collection of weapons and other materials used by the armed forces of allies and enemy nations—important as these were.

The major function of the Museum was the collection and preservation of pathological materials. As to this, Major Wilson, after he had been overseas for 6 months, wrote Colonel Owen that:

It is of course useless to talk about collecting pathological specimens except through the men who are making the pathological examinations and there were very few such men over here when I came. Most of the work was centered on bacteriology. At the same time there was great need for the development of an autopsy service. One of the first steps, therefore, was to cable back for a supply of pathologists \* \* \*. Since then we have made a thorough combout of the A.E.F. for pathologists, placed good men in the most advantageous positions, and talked the necessity of autopsies not only to laboratory men but also to clinicians and surgeons most insistently, until today we have a very high grade necropsy service in smooth working order. We still are very short of competent pathologists but those that are here \* \* \* are securing the fullest cooperation from the attending physicians and surgeons.<sup>54</sup>

The severe influenza epidemic, coinciding as it did with the great final American offensive in the Meuse-Argonne, put such a strain on medical personnel and facilities that "only relatively slight attention could be given to the collection of specimens." Nevertheless, despite the limited personnel and the lack of equipment, of supplies, of containers, and in fact of everything except

<sup>53</sup> Letters, Lieutenant Schwarz to Colonel Owen, 23 December 1918, and Major Ross to Colonel Owen, 19 December 1918 and 21 January 1919. On file in historical records of AFIP.

<sup>54</sup> Letter, Maj. L. B. Wilson to Col. W. O. Owen, 5 October 1918. On file in historical records of AFIP.

a multitude of specimens, upward of 6,000 pathological specimens were collected, preserved, and shipped to the Army Medical Museum.<sup>55</sup>

With the signing of the armistice on 11 November, the tremendous flow of men and materials across the Atlantic had to be reversed, with consequent confusion and delays. Recognizing that the specimens being shipped home-ward would be subject to unpredictable delays, Col. Walter D. McCaw, who had succeeded General Ireland as Chief Surgeon of the AEF, when he had become Surgeon General on 14 November 1918, upon the retirement of General Gorgas, issued, on 2 December, his Circular No. 58 supplementing and reinforcing Circular No. 42, and giving specific directions as to methods of packing and shipping specimens so that they would not deteriorate even if they should not be delivered for a couple of years.<sup>56</sup>

The flow of materials collected in France had little more than begun to reach the Museum, and most of the eager young men whom Colonel Owen had sent overseas were still over there, when the colonel reached the statutory age of compulsory retirement. Regretfully, in mid-January 1919, he yielded the curatorship to become, after his retirement, professor of anatomy at the Georgetown University School of Medicine.

Succeeding him as Curator was Col. Charles Franklin Craig, who was to be called upon to deal with the problem of handling the incoming flood of specimens and materials with no increase in the space in which they were to be processed and exhibited, and with a staff which, almost daily, was shrinking toward pre-war levels as the wartime additions were demobilized.

<sup>55</sup> Medical Department History, World War I, volume II, pp. 223-224.

<sup>56</sup> (1) *Ibid.*, p. 226. (2) Letter, Maj. L. B. Wilson to Col. W. O. Owen, 21 December 1918. On file in historical records of AFIP.

## CHAPTER X

# The Institute Idea

"At no time during the war was there a sufficient number of trained pathologists in the service," said Surgeon General Merritt W. Ireland in his annual report for the fiscal year ending 30 June 1919. "The same condition seems to exist in civil life," he added, "for it proved impossible to find a sufficient number of trained men."

A start toward correction of this situation was made when the position of the chief of the laboratory service in Army hospitals was made "coordinate in standing and authority with the chiefs of the medical and surgical services," thereby opening the previously blocked path to promotion for practitioners of pathology. During the year, also, special arrangements were made for the instruction of medical officers in pathology at the Government Hospital for the Insane (St. Elizabeths), in Washington, D.C., at the Brady laboratories of the hospital in New Haven, Conn., and at the Army Medical Museum, where special instruction in neuropathology was given.

"Pathology, however," as The Surgeon General said in his report, "is a subject in which a large experience is acquired slowly, and, in spite of efforts to train additional men by the arrangement of special courses of instruction, the number of qualified pathologists could not be greatly increased during the war."<sup>1</sup>

Meeting the need for more and better-trained pathologists became, in the period following the First World War, a prime purpose of the Museum. Col. Charles F. Craig, the first postwar Curator (fig. 61), was not primarily a pathologist but was distinguished for his studies of dengue fever, filariasis, the dysenteries, and, most particularly, malaria and its control. The incidence of the last-named disease in the Army was reduced in the first quarter of the 20th century from more than 700 to less than 10 per 1,000. This control of malaria in the Army was not the result of any one man's efforts, but Colonel Craig's contribution, through his "extensive investigations, writings, and advice" on the subject, was outstanding. He was chosen by a board of officers appointed by Surgeon

<sup>1</sup> Annual Report of the Surgeon General, U.S. Army, 1919, p. 1043.

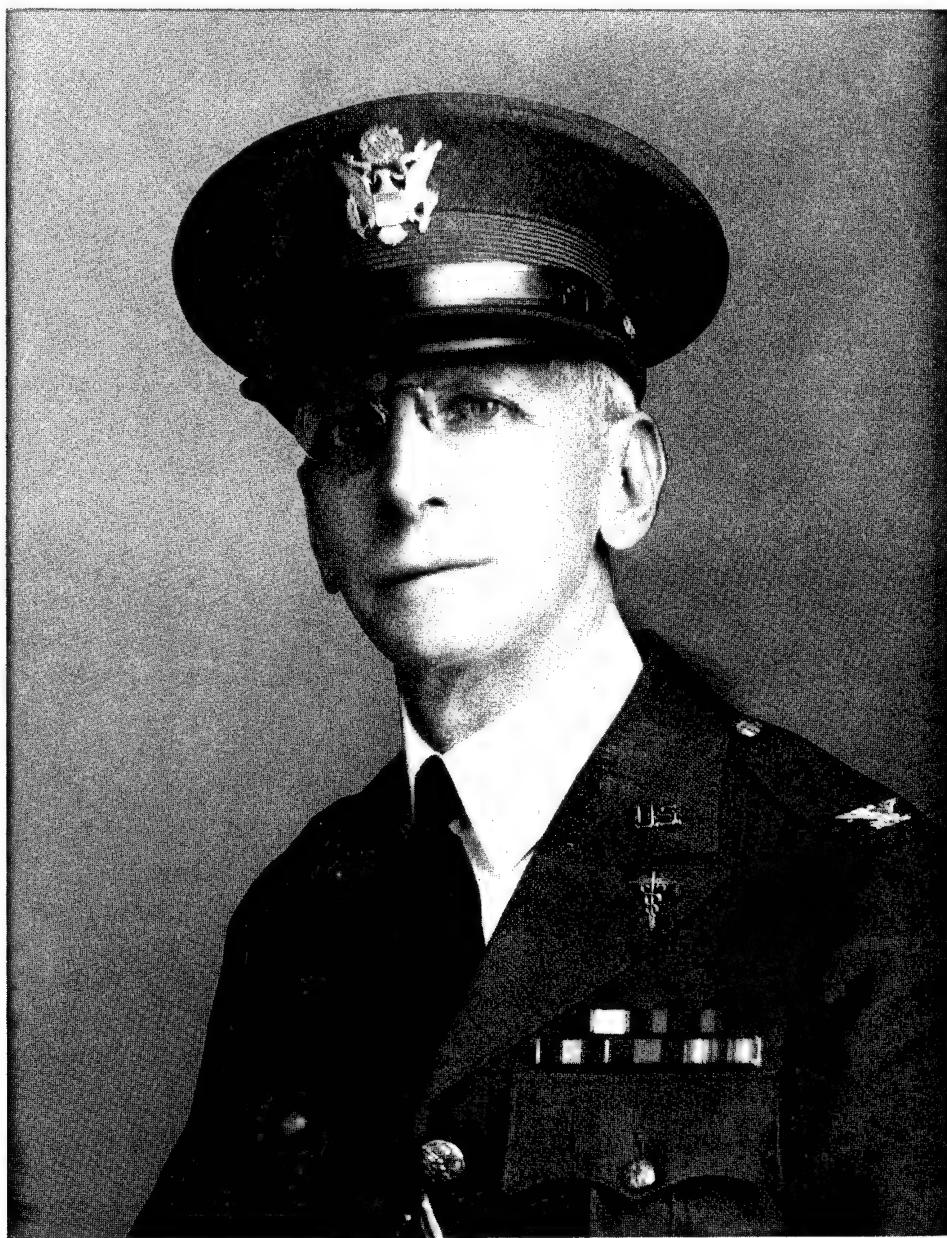


FIGURE 61.—Col. Charles F. Craig, eleventh Curator of the Museum, January–September 1919.

General William C. Gorgas to prepare for the Army the compendious treatment of the subject entitled "The Prophylaxis of Malaria with Special Reference to the Military Service," published by the War Office of the Surgeon General as

Bulletin No. 6, August 1914. This special interest, demonstrated ever since the time of the Spanish-American War, was further evidenced by his post-retirement career as professor and chairman of the Department of Tropical Medicine at Tulane University.<sup>2</sup>

### *The First Practicing Pathologist to Become Curator*

His successor at the Museum, in 1920, was Maj. George Russell Callender (fig. 62), a native of Massachusetts and a graduate of Tufts Medical College, who had served as Assistant Curator during Colonel Craig's administration. Major Callender was the first practicing pathologist to head the institution which was foremost in the Nation in the collection, preservation, and presentation of the raw materials of pathology and which, a quarter of a century later, was to become in name as well as in function an institute of pathology.

The problem which the Museum faced in the years after the First World War was three-pronged, with an enormous increase in the quantities of materials received, a diminishing work force to accession, catalog, and process the materials, and rigid limitations in the space available.

During and just after the First World War, the collections of the Museum more than doubled, rising from fewer than 48,000 to more than 100,000 specimens. The new specimens had to be accessioned and given numbers in a filing system which contemplated bringing together and keeping with each specimen all available pertinent information such as clinical histories, protocols of autopsies, photographs, X-ray plates, tissue blocks, microscopic slides, and anything else which might shed light on the pathological condition of the specimen.

Keeping up with the routine of accessioning and cataloging these materials as they came in "entailed a very large amount of work upon a very small clerical force," which was "the more difficult because of the constant decrease of personnel and the constant increase of work due to the material received from France," as well as that which came in from the hospitals in the United States as they were closed after the War.<sup>3</sup>

### *Space Problem Intensified*

More difficult to deal with than the problem of doing more work with fewer people was the problem of finding space in an already over-crowded

<sup>2</sup> Ashburn, P. M.: A History of the Medical Department of the United States Army. Boston: Houghton Mifflin Co., 1929, pp. 267, 268.

<sup>3</sup> Annual Report of the Surgeon General, U.S. Army, 1919, pp. 1063, 1064.



FIGURE 62.—Maj. George R. Callender, twelfth Curator, 1919-1922, and fourteenth Curator, 1924-1929, of the Museum.

building for the display, or even storage, of the inflow of materials. This problem was further complicated by a slow delivery of museum glass jars, which made it necessary to store many specimens in 10-gallon stone crocks in the basement of the west wing of the Museum and Library building. Not being

fitted with airtight tops, the crocks allowed evaporation of the preserving fluids, so that it was necessary to inspect and refill the crocks at intervals to prevent spoiling of the specimens.<sup>4</sup>

Some slight relief from the pressure for space was found in the discontinuance, on 1 March 1919, of the production of moving pictures, because of a lack of funds and personnel. This closing of the production end of the Museum's motion-picture activity did not stop the circulation and showing of films already made, which was continued both by the Museum and by the U.S. Public Health Service. Much of the demand for showings came from civilian sources, including medical colleges, medical associations and societies, and educational institutions.<sup>5</sup>

Before 1 May 1919, exhibits in the Museum were open to all the public. Feeling that the lay public would neither understand nor profit by viewing many of these exhibits, the Museum began on that date a systematic rearrangement of exhibitions, insofar as available space permitted, under which preparations and specimens not regarded as suitable for indiscriminate showing were to be removed from the floor of the main museum hall to the gallery and to rooms on the first floor which were to be open only to the medical profession, including students and research workers.<sup>6</sup>

"It is hoped eventually," Colonel Craig wrote, "to replace all pathological material on the main museum hall floor with material of general public interest, as specimens of ordnance, missiles, gas masks, sanitary appliances and apparatus used in the Army in the prevention of disease."

By the middle of 1920, gross pathological specimens, wax models illustrating skin diseases, and anatomical models and sections, had been removed to rooms on the first floor, as part of the plan of segregating material of interest primarily to physicians and medical students. At the same time, but for reasons involving the more effective use of available space, the exhibits illustrating the method of transmission and treatment of the hookworm disease, and the collection showing the historical development of the microscope were also removed from the main hall to the first floor.

The material removed from the main hall was replaced by material showing diseases from which both military and civil communities suffered, including malaria, typhoid fever, dysentery, and tuberculosis, displayed in such fashion

<sup>4</sup> Memorandum of Maj. J. F. Coupal: Activities of the Pathological Section of the Army Medical Museum During the World War. On file in historical records of AFIP.

<sup>5</sup> Annual Report of the Surgeon General, U.S. Army, 1920, pp. 246, 247.

<sup>6</sup> Annual Report of the Surgeon General, U.S. Army, 1919, pp. 1067, 1068.

as to be "valuable in the instruction of the general public in hygiene and preventive medicine."<sup>7</sup>

No amount of shuffling and reshuffling of exhibits within the confines of the 30-year-old building occupied by both the Library and the Museum could produce enough space to permit either a proper display of the exhibit materials or an effective use of the study collections (fig. 63). It was estimated, indeed, that proper display and exhibit of the World War materials alone would take up the entire room of the building, while the whole of the Museum's materials would fill a building twice the size of the one occupied by both the Library and the Museum. Accordingly, The Surgeon General earnestly recommended construction of a new building at as early a date as was possible.<sup>8</sup>

### *Plans for a Great Medical Center*

The first concrete step toward such a new building was the appropriation by the Congress, on 11 July 1919, of \$350,000 "for the purchase of land contiguous to Walter Reed General Hospital, District of Columbia, 26.9 acres more or less, for the final location of the Army Medical Museum, the Surgeon General's Library, and the Army Medical School." Supplemental to this appropriation, was an additional grant, on 22 September 1922, of \$44,109.22 "for the site of Medical Museum and Library."<sup>9</sup>

The project contemplated a great medical center, with the School, the Library, the Museum, and the Hospital in mutual support of one another. The plan as projected was never to be carried out fully. The Army Medical School moved from its rented quarters on Louisiana Avenue to its new building, in suburban Washington, in September 1923. The Museum, later transmuted into the Armed Forces Institute of Pathology, was to remain in its downtown location for yet another 30 years before moving the greater part of its activities to the Walter Reed site; while the Surgeon General's Library, under its new name of the National Library of Medicine, was to stay on Independence Avenue for still another decade and then move—not to Walter Reed, but to the grounds of the National Institute of Health.

At the time of the purchase of the land contiguous to Walter Reed, however, there were plans for a new building for the Museum in which The Surgeon General could carry out more effectively the idea of making available

<sup>7</sup> Craig, Charles F.: The Army Medical Museum and the Medical Profession. *Modern Medicine* 2: 542, August 1920.

<sup>8</sup> Annual Reports of the Surgeon General, U.S. Army, 1919, p. 1068, and 1920, p. 243.

<sup>9</sup> (1) 41 U.S. Statutes, 122. (2) 42 U.S. Statutes, 1029.

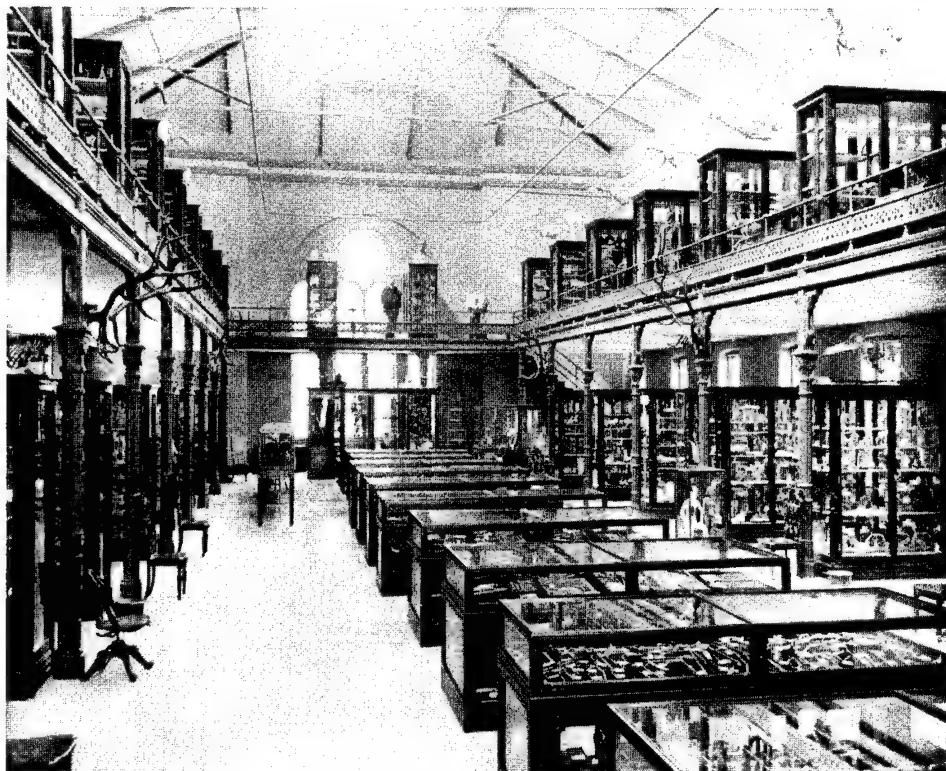


FIGURE 63.—The "Great Hall" of the Museum in the 1890's.

to research workers facilities for the study of the Museum's rich resources in pathological materials (fig. 64). So long as the Museum was crowded into its half of the old building, however, it was "impossible to furnish working rooms for research purposes," and the Museum's materials could be used by others than its immediate staff only by sending out available materials on loan, upon request by recognized research workers.<sup>10</sup>

Nevertheless, and despite the handicap of limited space and facilities, the Museum was, as The Surgeon General described it in his 1920 report, "a very valuable connecting link between the Medical Department of the United States Army and the general medical profession of the United States, from the standpoint of scientific medicine and surgery." Every feasible encouragement was offered for the use of the Museum's collections by civilian physicians, it being "believed that only in this way will the Museum fulfill its larger function of

<sup>10</sup> Craig, *Modern Medicine*, 2 (1920), p. 542.



FIGURE 64.—A 1920 photograph of the gross pathological laboratory of the Army Medical Museum.

being not only a place for the exhibition of pathological and other material, but a great instruction center in pathology and epidemiology.”<sup>11</sup>

This concept of the Museum as a connecting link between military and civil medicine, expressed by The Surgeon General in 1920, was not new. It was foreshadowed by Surgeon General William A. Hammond in the very beginning of the institution and had been repeated by other medical men, both military and civilian. It had been most eloquently voiced by Col. John Shaw Billings in his address to the Congress of American Physicians and Surgeons, meeting in Washington in 1888. Billings, in fact, had gone a step further when, in 1895, he entered into an arrangement under which the Museum became the repository of the dental and oral collections of the American Dental Association.<sup>12</sup>

<sup>11</sup> Annual Report of the Surgeon General, U.S. Army, 1920, p. 247.

<sup>12</sup> See chapter V, pp. 89–106.

*American Registry of Pathology*

In June 1921, there was initiated another and more active form of cooperation between the Museum and important segments of the medical profession. The first such arrangement—there are now 27—was outlined in a joint letter of Major Callender, representing the Museum, and Doctors Harry S. Gradle and Ira Frank, of Chicago, representing the Academy of Ophthalmology and Otolaryngology. In substance, this undertaking reflected the realities of a situation in which the Academy's members could furnish pathological materials which the Museum did not have, while the Museum could supply the home for the Academy's collections and the technical staff for the preparation of specimens. The arrangement thus entered into was confirmed by the Academy at its meeting in October 1921.

It was noted that the Army Medical Museum, at that time, did not have on its staff anyone well versed in the pathology of the special fields covered by the Academy and qualified to do the consultative diagnosis, which was to be a major feature of the active cooperative work contemplated under the new arrangement. It was necessary, therefore, to set up a committee of the Academy's specialists, to whom all specimens on which there was any doubt in diagnosis were submitted. Most active in this work were Dr. Frederick Herman Verhoeff of Boston, the committee chairman, and Dr. Harry S. Gradle of Chicago. Both men were prompt in reporting on the doubtful cases and specimens submitted to them by Major Callender, who did much of the work on the easier specimens himself.<sup>13</sup>

At first without a name or title, the new arrangement finally came to be called the Registry of Ophthalmic Pathology and became the first of the registries which make up the American Registry of Pathology. This great collaborative endeavor is housed and administered by the Armed Forces Institute of Pathology, but draws its strength and substance from the memberships of the 17 medical-specialty societies which sponsor the 27 individual registries now in operation.

<sup>13</sup> (1) The Atlases of Pathology. A symposium, presented at the Joint Session of the 57th Annual Session of the American Academy of Ophthalmology and Otolaryngology, in Chicago, 12-17 October 1952, and reported in: Transactions of the American Academy of Ophthalmology and Otolaryngology 57: 13-26, January-February 1953. (2) Zimmerman, L. E.: The Registry of Ophthalmic Pathology: Past, Present and Future. Transactions of the American Academy of Ophthalmology and Otolaryngology 65: 61-65, January-February 1961. (The 17th Jackson Memorial Lecture presented at the 65th Annual Session of the American Academy of Ophthalmology and Otolaryngology.) Dr. Zimmerman's lecture is as broad as its subject signifies and contains much of value, both historically and professionally.

The name "registry," which came to be applied to this form of cooperative medical endeavor, probably grew out of a case of suspected bone sarcoma in a patient of Dr. E. A. Codman of Boston. The patient's family wished to know of cases of recovery from what was, or was supposed to be, bone sarcoma, and the treatment which had resulted in a cure. Informally, Dr. Codman called on his personal acquaintances in the profession for such light as they could throw on cases, and their cures, if any. The first cases collected were placed in the Registry in July 1920, less than a year before the Museum and the Academy entered into their arrangement. Although the original patient for whose benefit the information had been gathered had died, it was realized that the information itself was too valuable to lose. Dr. Codman, therefore, took up the matter with Dr. James Ewing of New York and Dr. J. C. Bloodgood of Baltimore, with whose cooperation the Registry was informally organized. Other surgeons and pathologists became interested in the project, which was to be taken over, as part of its work, by the American College of Surgeons.

On 3 January 1922, Dr. Codman, using a bound, blank book with the printed heading "Register," began the diary of "The Registry of Bone Sarcoma." The primary object was to "keep an up to date list of all *supposed-to-be* sarcoma cases" by registering "every case (1) of which we have a brief history and an X-ray picture or a slide or tissue. (2) certain interesting or unusual bone tumor cases which have been confused with sarcoma."

The objectives were not greatly different from those of the almost contemporary and still nameless arrangement between the Museum and the ophthalmologists, and the basic idea of the operation was so nearly the same and so well contained within the idea of a registry of pertinent information in individual cases, that it was most natural to call the Museum-Academy arrangement by the same name of a "registry." Particularly is this the case since Dr. Codman was a friend and patient of Dr. Verhoeff, chairman of the cooperative committee of the Academy,<sup>14</sup> to whom he might well have given the idea of calling the new alliance between military and civilian medicine a "registry."

### *Working in a New Direction*

At any rate, and regardless of the name, the new movement was destined to give a largely new direction to the work of the Museum. At the first annual meeting of the American Academy of Ophthalmology and Otolaryngology, held after the new relationship between that organization and the Museum,

<sup>14</sup> Zimmerman, *Transactions of the American Academy of Ophthalmology and Otolaryngology*, 65 (1961), pp. 62, 69-71.

the Museum exhibited some of its resources in the way of specimens of ophthalmic pathology, most of which had been collected from members of the Academy during the year since the joint project was undertaken. The exhibit received high praise from the doctors in attendance, and was the subject of commendatory letters and expressions of appreciation from Dr. Walter R. Parker of Detroit, president of the Academy during the first year of its sponsorship of the Registry.<sup>15</sup>

The arrangement between the Museum and the professional sponsors of the Registry was strengthened by the subsequent addition of Dr. Jonas Stein Friedenwald of Baltimore and Dr. Georgiana Theobald of Chicago to its sponsoring committee. It was further advanced during its first year in operation by the gift, from Dr. James Moores Ball of St. Louis, of his entire collection of historical and operative ophthalmic materials. The Ball collection became, indeed, something of a cornerstone in the building of the Registry. It included 136 items of historical interest and value, which alone "would have been a generous donation" to the Museum. But this was only a portion of the gift, which included an interesting collection of ophthalmic instruments, large numbers of microscopic slides and other items, nearly 500 gross pathological specimens, and more than 1,000 pictorial items.<sup>16</sup>

While the movement for what came to be called the Registry of Ophthalmic Pathology originated with the American Academy of Ophthalmology and Otolaryngology, and that organization continued to be its major support, it was soon strengthened by the affiliation of the two other groups of specialists in this field, the American Ophthalmological Society and the Ophthalmic Section of the American Medical Association.

The Registry was fortunate both in its professional sponsorship and in the Army personnel with which it had to deal. Surgeon General Ireland and Curator Callender were of one mind in feeling that the Medical Museum should, as Major Callender put it, "become a live activity in pathology in addition to its function of collecting, studying and reporting on the injuries and diseases of armed conflict."<sup>17</sup>

<sup>15</sup> *Ibid.*, pp. 65-67.

<sup>16</sup> (1) Dr. Ball's gift to the Registry was made at the instance of Dr. George E. deSchweinitz of Philadelphia. Other major donors to the Registry in its early years included Dr. Harris P. Mosher of Boston, who gave more than 600 specimens and Dr. E. C. Ellett of Memphis, whom General Callender declared was "the largest single contributor and active supporter during the first ten years of the Registry's existence." (2) Coupal, James F.: Special Report: The Ophthalmologic Collections from the American Academy of Ophthalmology and Otolaryngology at the Army Medical Museum. *American Journal of Ophthalmology* 6: 853, 854, October 1923.

<sup>17</sup> Callender, George R., *Transactions of the American Academy of Ophthalmology and Otolaryngology*, 57 (1953), pp. 14-15.

And the movement was doubly fortunate in the member of the Museum staff assigned to the operation of the first registry—Miss Helenor Campbell, a young lady whose previous experience included 6 years as a technician in pathology at the Johns Hopkins Hospital. Miss Campbell, afterward Mrs. Wilder (fig. 65), joined the Museum staff in 1920 as a medical technician. In 1953, upon her marriage to Mr. Rudolf Foerster of San Francisco, she retired as an ophthalmic pathologist—justly renowned as “the famous Mrs. Wilder.” Upon the occasion of her retirement, after more than 30 years of distinguished



FIGURE 65.—President and Mrs. Eisenhower congratulate Mrs. Helenor Campbell Wilder (now Mrs. Rudolf Foerster) upon her achievements in ophthalmology which won for her the designation as “Woman of the Year in Science” by the Women’s National Press Club in 1953.

service, Mrs. Foerster, as she then was, was presented by her associates at the Armed Forces Institute of Pathology with a bound collection of her published contributions to an increasing knowledge of pathology and ophthalmology. The collection covered a span of 32 years, from 1922 to 1954. It included 35 articles, appearing in 17 different publications. In 18 of the articles she was the sole author; in 17 she had as collaborators some of the outstanding authorities in the field covered. Speaking in 1952 of the early days of what is now the oldest medical registry in the United States, General Callender gave the "highest credit" for its success to the woman who served it so brilliantly for so many years, and whose scientific attainments were such as to lead to her election to membership in professional medical societies, despite her lack of the college degrees ordinarily required for entrance. Mrs. Wilder made "two of the most eminent discoveries in ophthalmology of the past two decades" by her demonstration of toxoplasmosis in many cases which had previously been diagnosed as tuberculous, and her finding that the larvae of nematodes are "a not infrequent cause of endophthalmitis" or inflammation of the inner structure of the eye.<sup>18</sup> By her outstanding achievements, she well merited the honorary degree of doctor of laws conferred upon her in 1955 by Mills College, Oakland, Calif.

### *Varied New Activities of the Museum*

Another new service of the Museum, evidencing its increasingly close relations with the medical profession in general, was its designation as the institution entrusted by the Society of American Bacteriologists with the custody and maintenance of its type cultures. Under this arrangement, which went into effect in May 1922, the Museum became the depository of the "purebred" strains of every differentiated bacterium of interest to medicine, from which subcultures of particular strains were supplied upon request. This arrangement, valuable alike to the medical profession and to the Museum, continued for 3 years until, adequate funds having been obtained, the activity was transferred to the National Research Council, with the type cultures located at the McCormick Institute for Infectious Diseases in Chicago. During the time the cultures were maintained at the Medical Museum, the subcultures distributed came to number as many as 4,000 a year, in response to 700 re-

<sup>18</sup> (1) *Idem.* (2) AFIP and Ophthalmology. Archives of Ophthalmology 67: 31, May 1962. (3) AFIP Centennial. Archives of Ophthalmology 67: 177-178, May 1962. (4) Lebenson, J. E.: The Armed Forces Institute of Pathology. American Journal of Ophthalmology 53: 695, April 1962. (5) Zimmerman, *Transactions of the American Academy of Ophthalmology and Otolaryngology*, 65 (1961), pp. 78, 79.

quests—a use which increased approximately eightfold while the work was being done at the Museum.<sup>19</sup>

Still another new activity of the post-World War I period, which helped to intensify the turn taken by the Museum toward becoming an institute of pathology, was the designation of the Museum as the location of the central exchange for pathology specimens of the American and Canadian Sections of the International Association of Medical Museums. This work had been carried on, somewhat informally and in a limited way, as an addition to her other duties, by Dr. Maude E. Abbott of McGill University who, over the years, had been the mainspring of the work of the International Association. In the spring of 1921, Prof. James W. Jobling of the College of Physicians and Surgeons in New York, brought to a head the rather formless discussions of the subject of a central exchange by a letter to The Surgeon General of the Army suggesting the establishment of such an arrangement, to be housed and administered by the Army Medical Museum. The subject was submitted to Major Callender for his recommendation. Major Callender strongly urged the adoption of Dr. Jobling's suggestion, saying in a memorandum of 13 April to The Surgeon General, that the establishment of such an exchange at the Museum would be of material benefit "by bringing the Museum into the closest contact with our medical educational institutions" by rendering to them a most valuable service and, at the same time, would enable the Museum to strengthen its collections.

The Surgeon General agreed, the Secretary of War approved and authorized the issue of a revocable lease for the necessary quarters at the Museum, and The Surgeon General authorized the officers at the Museum to undertake the administrative details. On 1 May 1922, the Museums Association authorized the removal of the central bureau for the preservation of results of medical research and the exchange for pathological specimens from Montreal to Washington.

In an editorial in Bulletin VIII of the International Association of Medical Museums, Major Callender said:

The central bureau for the preservation of the results of medical research will have a permanent file of records entirely independent from those of the Museum as a whole, and separate cabinets for slides and cases for specimens representing the result of original research. It will be kept carefully under suitable safeguards to prevent loss and will be open for consultation under adequate supervision to those qualified to consult it.<sup>20</sup>

<sup>19</sup> Annual Reports of the Surgeon General, U.S. Army, for fiscal years 1922, p. 108; 1923, p. 104; 1924, p. 161; 1925, p. 210.

<sup>20</sup> (1) Letter, Major Callender to Professor Jobling, with memorandum to The Surgeon General, 13 April 1921. On file in historical records of AFIP. (2) Callender, G. R.: The Exchange of Museum Specimens. International Association of Medical Museums Bulletin VIII, December 1922, p. 12.

Busy as he must have been with the launching of such a variety of new and valuable prospects, Major Callender was faced, in 1922, with proposals for combining the Army Medical Museum with the Smithsonian Institution. This movement had what probably was its fullest and most elaborate exposition in a letter from Dr. Arthur MacDonald of Washington, sent to many scientists and inserted in the *Congressional Record* by Representative Melvin O. McLaughlin of Nebraska under the title "Consolidation of Government Science Under the Smithsonian Institution."<sup>21</sup>

Dr. MacDonald's letter was not directed solely at the Army Medical Museum. His plan contemplated placing 33 bureaus of government organizations having to do with scientific matters under the jurisdiction of the Board of Regents of the Smithsonian Institution. Among the agencies which would have been affected were the Geological Survey, the Reclamation Service, the Bureau of Mines, the Patent Office, the Census Office, the Bureau of Standards, the Bureau of Fisheries, the Public Health Service, the Army Medical Museum and Library, the Library of Congress, the Government Hospital for the Insane (St. Elizabeths), the Coast and Geodetic Survey, the Naval Observatory, and all the scientific bureau of the Department of Agriculture.

The advantages claimed for this wholesale transfer of government agencies was that under it government science would develop to the highest efficiency, by correcting illogical and haphazard arrangement of bureaus or departments, and by reducing to a minimum political influence in scientific bureaus. The plan was likened to the administration of a university, with the Secretary of the Smithsonian Institution being analogous to the president of the university, and the Board of Regents, consisting of the Chief Justice, the Vice President of the United States, and three members each from the Senate and the House of Representatives, corresponding to the university trustees.

### *Possible Courses of Action*

The movement for consolidation of all governmental scientific activity does not appear to have developed any great popular strength, but coming as it did, just as the Army Medical Museum was changing its direction so as to expand its services to medicine in general, as well as military medicine in particular, such public discussion of the plan led Major Callender to give serious and concentrated thought to the position and the future course of the Museum.

Possible courses of action, as outlined in a memorandum of 13 February 1922, for The Surgeon General, were fourfold: (1) The Army Medical Musuem

<sup>21</sup> Congressional Record, 67th Congress, 1st session, volume 405, pp. 8833-8835, 26 October 1921.

might continue "to be maintained as the only medical museum of national character as it has been for the past sixty years," with exhibits "for the purpose of educating the lay public in preventive medicine and hygiene" and an "entirely separate collection of a scientific nature" or (2) that the Museum should confine its activities to fields of general and preventive medicine as directly applied to the Army, leaving the broader field of medicine to be dealt with by another institution; or (3) that the Museum should "confine its activities to diseases particularly affecting troops;" or (4) that the Museum, as a temporary policy only, should continue to accept "temporarily the display of hygienic and preventive medicine, awaiting further developments."

In analyzing the various plans, Major Callender put the cost of maintaining and operating the Museum proper, exclusive of rental and repairs to the building, at about \$40,000—an expense so small that the institution was being "run below par." Costs under plan 1, he estimated, would be about \$100,000 more than the prevailing level of costs, in addition to the requirements of larger space. Plans 2 and 3 would have little effect upon costs, while plan 4 would mean that additional help from some source would be required, if exhibitions of preventive medicine and hygiene were to be done by the Museum.

"The Army has had the only national museum worthy of the name in the United States \* \* \*" Major Callender wrote, which "is one of our most valuable contacts with the civilian profession." Under Army control the facilities of the Museum had been offered "to other government services which might and should be interested in studying, particularly human pathology." Specifically, the U.S. Public Health Service and the Veterans' Bureau had been "apprised of our willingness to take care of their material for them."

"In a similar way," he continued, "we are now cooperating with all societies who desire special representation in a museum of national character with the idea that one medical museum is sufficient for all." Because Army medical personnel are so mobile and are therefore subject to infection with diseases to which they are not accustomed, he added, "medical museums are absolutely necessary" for the education of medical officers in dealing with unfamiliar diseases. The same thing was "becoming important to the civilian profession because of the ease of travel throughout the world today"—truly a prophetic note to strike in 1922, when transatlantic flight had been achieved by only two stripped-down military planes, and the age of the jet airliner was not yet even on the most advanced drawing boards.

Major Callender also pointed out that the Medical Department of the Army was in far better position to conduct a medical museum than was any other government service or an independent organization. "This is true," he said,

"for preventive medicine and hygiene, as well as for pathology. Army officers have, since the advent of modern means of disease control, led the field in preventive medicine and hygiene. This work is largely a development of the last 25 years and was first brought to notice by Reed. It has since been ably continued by Gorgas, Ashburn, Russell, Craig, and scores of others \* \* \*." The comparative richness of the results of Army medical research was attributed, in part, to the fact that "the civilian profession, while frequently establishing the principles used as a basis for disease control, lack the opportunity to prove their worth which are offered the military by reason of the latter's contract with bodies of troops under discipline."

The Medical Department of the Army, moreover, "by reason of its control over 1,400 officers, including dental, veterinary and administrative corps, is in a more favorable position to collect material illustrating disease conditions. Thus, it can direct the collection of pathological and other material as it now does disease bearing insects and thus obtain results impossible for an independent institution without the expenditure of enormous sums of money and the sending of details of scientific men to all parts of the globe."

Balancing various considerations, without closing the door on any of the suggested plans, Major Callender concluded that under any plan of organization there still would be need for a museum aimed at both educating the lay public in preventive and hygienic measures and also at the further education of medical personnel. "I believe that eventually there will be a large national medical museum," he said in his memorandum for The Surgeon General, "and I am sure that the military medical aspects of such a museum must be an integral part of the Army Medical School. Otherwise it will be a curio shop appealing only to morbid interest while its real value is purely educational for graduates in medicine, more particularly officers of the Medical Department."<sup>22</sup>

For yet another quarter of a century after Major Callender finished his first tour of duty as Curator, the Museum would continue in its same quarters, combining under one roof its functions as a place for professional study and research and as a place for interesting and informing the lay public in matters medical. But already, in the years just after the First World War, the differentiation in objective and function was emerging. The Museum was becoming, more and more, an Institute.

<sup>22</sup> Memorandum, George R. Callender, Curator, for The Surgeon General, U.S. Army, 13 February 1922. On file in historical records of AFIP.

## CHAPTER XI

# The Registry Movement

"The evolution of the pathology registries stands out as the most important organizational development in American pathology," declared Brig. Gen. Elbert DeCoursey, addressing the annual meeting of the American Academy of Ophthalmology and Otolaryngology in 1952.<sup>1</sup>

When General DeCoursey, then the Director of the Armed Forces Institute of Pathology, made his comment upon the importance of the registry movement, there were 21 registries in successful operation, with many thousands of cases registered and subject to the organized and systematic study of the manifestations of disease and trauma, with provision for regular periodic followup to check on developments and responses to treatment.

In the 1920's, however, the registry movement was quite limited in scope, being confined for the first 5 years to but two examples—the original arrangement with the American Academy of Ophthalmology and Otolaryngology, set up in 1921, and a second registry in lymphatic tumors, established in cooperation with the American Association of Pathologists and Bacteriologists in 1925. Two years later a third registry, in bladder tumors, was set up under the sponsorship of the American Urological Association.

Succeeding Maj. George R. Callender as Curator of the Museum was another native of Massachusetts and graduate of Tufts Medical College, Maj. James Francis Coupal (fig. 66), who had been Assistant Curator under Callender. He was to serve from 1922 to 1924, in which year he was appointed White House physician during the administration of President Calvin Coolidge. Upon his withdrawal from the Museum, Major Callender returned to serve as Curator in the 5 years from 1924 to 1929.

During the administration of Major Coupal, a start was made toward a reclassification of the contents of the Museum, using an adaptation of Dr. Maude E. Abbott's modification of the Wyatt-Johnson museum classification.

<sup>1</sup> DeCoursey, Elbert: The Atlases of Pathology. A symposium, presented at the Joint Session of the 57th Annual Session of the American Academy of Ophthalmology and Otolaryngology in Chicago, 12-17 October 1952, and reported in: Transactions of the American Academy of Ophthalmology and Otolaryngology 57: 15, 16, January-February 1953.



FIGURE 66.—Maj. James F. Coupal, thirteenth Curator of the Museum, 1922-1924.

Under the new system, the anatomical names and the pathological lesions which produced disease and death were listed, with a number assigned to each of the anatomical terms used. The numbers, listed in accordance with the International List of Causes of Death, were used as a code. The code was cross-filed, so that it was possible to locate specimens by their anatomical names, by

their pathological classifications, and by the names of their contributors. By 1924, the new system had been applied to 5,000 protocols, 4,000 gross pathological specimens, and 4,500 miscellaneous items.<sup>2</sup>

By the end of Major Callender's second tour of duty as Curator of the Museum, in 1929, the original ophthalmic registry had accumulated 2,000 registered cases, while the two tumor registries had about 200 each. The registries, in Major Callender's opinion, were well established and had "reached that stage of development and activity which makes necessary more professional, technical and clerical work that can be given by the Army Medical Museum."

To find adequate support and to insure that there should be continuity of policy in the registry movement, Major Callender took up with Dr. Ludwig Hektoen, Chairman, Division of Medical Sciences of the National Research Council, the matter of recognition of the registries as a joint activity of the Council, the Museum, and the sponsoring professional societies. As a result, and with the approval of the Council, the American Registry of Pathology was formed, in 1930, by a committee headed by Dr. Howard T. Karsner (fig. 67) of Cleveland as chairman and Major Callender as secretary. Other members of the committee included: Dr. James Ewing of New York, Dr. Stanley P. Reimann of Philadelphia, and Doctors Bowman C. Crowell, Harry S. Gradle, and Herman L. Kretschmer of Chicago, all of whom had been active in promoting the existing registries or were interested members of professional societies, such as the associations combating cancer, who were naturally interested in the project.

### *Objective of the Registry*

The object of the American Registry of Pathology, which has grown to include 27 specific specialty registries, as outlined by Major Callender,<sup>3</sup> is to "collect data and specimens from patients, especially those with tumors, with a view to accumulating a sufficient number of instances of each disease to determine its characteristic course, the criteria for diagnosis, and to evaluate methods of treatment \* \* \*. The cases preferred are those living at the time of registration, and that can be followed so that the outcome may be ascertained. The following up of these cases will constitute a considerable and important part of the Registry's activities."

<sup>2</sup> Coupal, James F.: Modification of the Wyatt-Johnson Museum Classification in Use at the Army Medical Museum, Washington, D.C. International Association of Medical Museums Bulletin X, April 1924, pp. 47-73.

<sup>3</sup> Callender, George R.: Report of Committee on Ophthalmic and Oto-Laryngic Pathology, 35th Annual Meeting of the American Academy of Ophthalmology and Otolaryngology. Transactions of the American Academy of Ophthalmology and Otolaryngology, 1930, pp. 530-535.

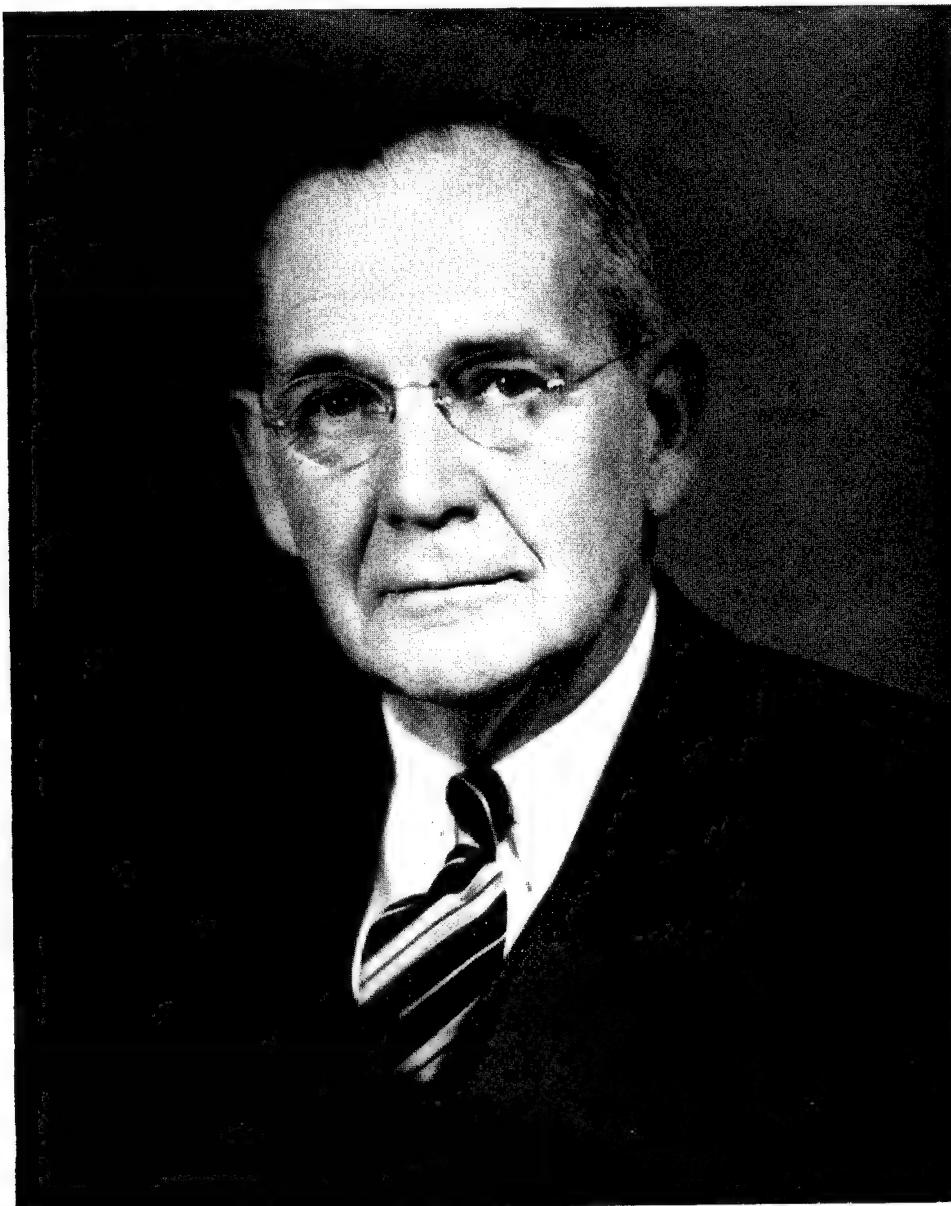


FIGURE 67.—Dr. Howard T. Karsner, pre-eminent pathologist who throughout the years, has been a discerning critic, a firm friend, and a staunch supporter of the Medical Museum and its offspring, the Armed Forces Institute of Pathology.

Diagnosis in the early stages of disease "offers the best chance of cure," Major Callender said, but early and accurate diagnosis is not possible in the absence of opportunity to observe enough cases to form a basis for reasonable

judgments. Except at large medical centers, there were too few cases of any one kind to afford such opportunity for study. By combining cases from the country as a whole, Major Callender observed, "It will be possible to obtain considerable numbers of cases and specimens in a much shorter time."

The Registry was not intended to replace the local pathologist and would "never serve as a diagnostic laboratory." Rather, it was to be "a clearing house in pathology to which will be sent cases already diagnosed and the obscure cases about which more can be learned by obtaining the opinions of several pathologists. In addition, by sending 'follow-up' letters to the physician registering cases, the Registry will be a means of helpful stimulation."

The success attained by the three registries already in operation when the American Registry was formed, had "been obtained in spite of a minimum of publicity effort because there has been insufficient personnel at the Army Medical Museum to conduct larger collections. As the registries have become better known, the 'follow-up' work alone is more than can be handled adequately in the time of the Museum personnel available for it."

"The expense of these registries has thus far been borne entirely by the Museum, whose entire budget, inclusive of all personnel and upkeep of plant, is about \$30,000. The expense for materials and equipment for the proposed registry can be handled by the Museum," he added, "but it is necessary to have additional help in the form of professional, clerical and technical personnel."

Other activities of the Museum personnel included the handling of the tissues and histories of all cases of tumor or suspected tumor in the Army, and the review of the protocols of all Army necropsies, numbering about 800 a year.<sup>4</sup> With a staff of but one medical officer, two medical technicians, one stenographer, and one typist, it was obvious that additional help must be had if the registries were to realize their full potential. Another obstacle to securing continuity of policy was the fact that the officer personnel on duty at the Museum was shifted every 4 years, usually, and in many cases after even shorter periods.

In his outline of the operations and potentialities of the American Registry of Pathology, Major Callender paid particular attention to the possibilities offered by the registry in the earlier diagnosis of malignant growths. "It is generally acknowledged by pathologists," he said in his 1930 outline, "that many neoplasms are difficult to diagnose. \* \* \* The earliest changes which signify malignancy are not sharply defined. In fact, there is serious doubt if we know by sight the earliest malignant changes in any tissue. Unless cases are followed up we cannot

<sup>4</sup> Army Regulations No. 40-410, 18 January 1922, paragraphs 19, 20.

learn these changes. Even if a definite cause for cancer should be found, it will still be necessary to recognize the earliest change indicating its presence."

In his outline of the American Registry of Pathology, he referred to the project for a new building for the Museum and the Library at the Army Medical Center, adjacent to the Walter Reed General Hospital as "being before the Bureau of the Budget. In the new building, as contemplated, there will be rooms available for research by scientists not on the Museum staff. Laboratory facilities will be available and all collections of the Museum will be more accessible for research."

The dream of the new building was not to come to fruition for yet another quarter of a century after the American Registry of Pathology was set up by the National Research Council, an agency of the National Academy of Sciences, which was authorized to receive and administer any funds contributed to the Registry. Through the channel thus opened, the medical specialty societies could conveniently make financial contributions to the work of the Museum in pathology.

### *Organized Civilian Cooperation*

These contributions have continued over the years, but the greater contribution by far has been the active cooperation of the specialists in the registry work in what has been aptly called an "effective synergism."<sup>5</sup> The way in which the Museum and the civilian specialists worked together was well described in the 1927 report of Maj. Gen. Merritte W. Ireland, The Surgeon General of the Army, as follows:

In the operation of a registry, case reports accompanied by specimens are sent in to the registrar. Slides of the specimen are prepared, and when the diagnosis is in doubt the entire case is circulated to a group of pathologists. The diagnoses furnished are studied and the case is classified by the registrar in cooperation with a committee appointed by the society conducting the registry. In so far as possible, only cases living at the time of registration are accepted and every case is followed to its conclusion. In this way large numbers of cases are brought together, followed by subsequent reports to their decease, and classified and studied to determine the character of the disease process, the course of the disease, and to evaluate the methods of treatment.

The emphasis of the registries, it will be noted, was on living cases to be followed to the end rather than on specimens resulting from post mortem cases, important as they are. "The registries," said the 1927 report of The Surgeon

<sup>5</sup> Dart, Raymond O.: The Army Medical Museum. International Association of Medical Museums Bulletin 27: 13, 1947.



*The*  
**MEDICAL DEPARTMENT  
 OF THE UNITED STATES ARMY  
 IN THE WORLD WAR**

VOLUME XII

PATHOLOGY OF THE ACUTE RESPIRATORY  
 DISEASES, AND OF GAS GANGRENE  
 FOLLOWING WAR WOUNDS

PREPARED UNDER THE DIRECTION OF  
 MAJ. GEN. M. W. IRELAND  
*To the Surgeon General*

BY  
 MAJ. GEORGE R. CALLENDER, M. C.  
 AND  
 MAJ. JAMES F. COFFAL, M. C.



WASHINGTON : U. S. GOVERNMENT PRINTING OFFICE : 1929

FIGURE 68.—Title page and an illustration from volume XII of “The Medical Department of the United States Army in the World War.” The illustration shows the lung in a case of pneumonia following influenza.

General, “are the source of the most valuable material now being received, and the museum is fortunate in being chosen to conduct them.” Since the registries had been “accepted as offering the greatest aid in determining the best method of reducing the mortality from malignant disease,” it was confidently predicted that “registries in other lines will follow as the years go by.”<sup>6</sup>

Six years were to go by, however, before another registry was established—years in which Major Callender was to complete his second tour of duty at the Museum, in 1929, to be succeeded by Maj. James Earle Ash, whose first tour of duty covered the years to 1931 and who, in turn, was to be succeeded by Maj. Paul Edgar McNabb, who served until 1933 when Maj. Virgil Heath Cornell became Curator.

The year 1929 was marked by the publication of volume XII of “The Medical Department of the United States Army in the World War” (fig. 68), which dealt with the two subjects chosen as the most important conditions of the war from the standpoint of pathology. The first section of the work, “Pathology of

<sup>6</sup> Annual Report of the Surgeon General, U. S. Army, 1927, pp. 221, 222.

the Acute Respiratory Diseases" was written by Major Callender; the second section, "Pathology of Gas Gangrene Following War Wounds," by Maj. James F. Coupal, former Curator of the Museum. The richly illustrated volume, with 24 plates in lifelike color and 312 black-and-white pictures, was based to a large extent on material in the Medical Museum, and made use of the photography and artwork produced by the Museum staff, including Maj. Theodore Bitterman, S.C., Capt. R. W. French, Inf., and Messrs. Roy M. Reeve, F. E. Prior, Garnet Jex, L. W. Ambrogi, Walter Parker, and Edward V. McCarten, to whom grateful acknowledgement was made.<sup>7</sup>

Major Callender's successor, Major Ash (fig. 69), was a native of Philadelphia and a medical graduate of the University of Pennsylvania. His 6 years of postgraduate experience in various hospitals had been supplemented by study in Vienna, where the young doctor and his slightly older colleague, Howard T. Karsner, both men destined to distinction, worked at the State Therapeutic Institute. Upon his return to the United States, Dr. Ash served 3 years on the staff of the Harvard University Medical School. There he became interested in tropical diseases—an interest which turned him to the Medical Department of the U.S. Army, which was outstanding in that field. He was commissioned in the Medical Corps in 1916.

On his second tour of duty at the Museum, from 1937 to 1947, he was to become known as the principal protagonist of the spreading registry movement, but during his first tour, 1929 to 1931, there was no further increase in the roster of registries. This may be partially accounted for by the "greatly increased" work of the Museum staff in the fields of diagnosis and consultation, following the issuance of The Surgeon General's Circular Letter No. 2, on 12 February 1929.

### *Histopathology and the Museum*

This circular called to the attention of all Medical Department officers the fourfold functions of the Museum with reference to tissue pathology. These were, the letter said, "to obtain material for instruction and research; to preserve material permanently for reference purposes; to act as a consulting service; to examine and diagnose surgical, biopsy, and autopsy material for stations at which adequate laboratory facilities and personnel for such diagnostic work are not available." The cooperation of all medical officers in selecting and sending in to the Museum "specimens presenting interesting pathological conditions" was urged, but the greater stress was laid on the diagnostic and consulting functions.

<sup>7</sup> The Medical Department of the United States Army in the World War. Washington: U.S. Government Printing Office, 1929, volume XII, pp. v, vi.



FIGURE 69.—Col. James E. Ash, fifteenth Curator, 1929-1931; twentieth Curator, 1937-1946; and first Director, Army Institute of Pathology, 1946-1947.

The availability of this diagnostic service at the Museum "apparently is not fully appreciated by the surgeons of all military hospitals," the letter said, in announcing that certain hospitals had been designated as centers to which selected portions of tissue might be sent for emergency diagnosis "when the best interests of

the patient necessitate a microscopical diagnosis at the earliest possible moment and local facilities for such diagnostic work are not available."

The hospitals so designated were Letterman General Hospital, for the IX Corps area; William Beaumont General Hospital and the Station Hospital at Fort Sam Houston, for the VIII Corps area; Fitzsimons General Hospital, for the VII Corps area; and the Army Medical Museum itself for the I through the VI Corps areas. The officer making the diagnosis was instructed to report by telegraph or radio when, in his judgment, such a course was required. In all cases, specimens were to be furnished to the Museum, together with a copy of the report. Explicit instructions were given for the preparation and shipment of specimens and the writing of autopsy protocols, all of which were to enter the collections of the Medical Museum for final study, review, and preservation.

### *Inescapable Housekeeping*

"There is an enormous amount of work that should be done in rearranging exhibits and developing the material already on hand," said the annual report of the Surgeon General for 1929, "but it must be put aside for the more urgent current demands" of the consultation and diagnostic service which, as the Museum's most important function, "has precedence over all other activities."<sup>8</sup>

Although the diagnostic and consultation functions of the Museum had first precedence, there were always inescapable housekeeping chores to be attended to. The Museum's material, stored in the basement, was surveyed, and the portions which had deteriorated and become useless were disposed of. The cleanup was hampered by the chronic shortage of personnel. The task of sorting material, and especially the "enormous amount of facio-maxillary material which had accumulated during the few years after the war" was perhaps made simpler by the adoption, in 1930, of straight alphabetical indexing, which was described as "much simpler and more efficient" than the numerical system of coding adopted in the years just after World War I. Even though there were no new registries set up, "active interest" in the three existing ones was continued. In fact, nearly one-third of all accessions in 1930 were contributed through the route of the registries.<sup>9</sup>

In the fall of 1931, Major McNabb (fig. 70) succeeded Major Ash as Curator of the Museum. The new Curator, a native of Tennessee, received his M.D. degree at the University of Pennsylvania. His Army service had

<sup>8</sup> Annual Report of the Surgeon General, U.S. Army, 1929, p. 267.

<sup>9</sup> Annual Report of the Surgeon General, U.S. Army, 1930, pp. 271-273.



FIGURE 70.—Maj. Paul E. McNabb, sixteenth Curator of the Museum, 1931-1933.

included tours of duty in the Canal Zone and the Philippines, where he had been president of the Army Medical Research Board.

During Major McNabb's administration, the photographic section of the Museum was particularly active in color photography of both gross and microscopic specimens for museum display and also for lantern-slide demonstration.

There had been earlier efforts at the Museum to produce true color reproductions of pathological specimens, as reported by Major Callender, Major Coupal, and Mr. F. E. Prior, in an article published in Bulletin No. X of the International Association of Medical Museums. Effective results were produced by a method which involved accurate photographic prints which were colored by hand, with the resulting picture reproduced by lithography. The 1932 experiment, carried on by Roy M. Reeve, photographer for the Museum, and Joseph Carter of the U.S. Department of Agriculture, sought to secure correct coloring by making three color separation negatives, from which prints were made in blue, red, and yellow. The prints were superimposed upon one another, checked for accurate registration, and true color values, corrected by differential printing of the three images, and then mounted—yellow image first, red second, and blue third, to complete the picture. The Reeve-Carter process produced effective color prints, even though it required much patience and a high degree of manipulative skills, and was a distinct advance in the development of today's simpler and more rapid systems of producing photographs in color.<sup>10</sup>

### *The Museum at Threescore Years and Ten*

In 1932, the 70th year of the existence of the Army Medical Museum, its exhibits were viewed by 67,689 visitors. Because of a lack of space, only about half its collections could be placed on exhibition. The collections "combined exhibits of historical value and interest to the Medical Corps of the Army, to the medical profession at large, and to the general public." There was, however, a "great volume of material of a purely pathological character"—for it could never be forgotten that the Museum was, above all else, "the active central unit of pathology in the Army." As such, it received, in its 70th year, protocols and specimens from nearly 1,000 autopsies performed at Army hospitals, representing more than 56 percent of all deaths in these hospitals.<sup>11</sup>

Major McNabb was succeeded as Curator by Maj. Virgil H. Cornell in 1933 (fig. 71). The new Curator was a native of Brooklyn and received his medical degree at the Long Island College of Medicine in 1913. Thirty years later, after serving as pathologist and chief of the laboratory service at major

<sup>10</sup> (1) Callender, G. R., Coupal, J. F., and Prior, F. E.: True Color Reproduction of Pathological Specimens. International Association of Medical Museums Bulletin X, April 1924, pp. 38-41. (2) Reeve, Roy M.: Color Photography in the Medical Museum. Journal of Technical Methods and Bulletin of the International Association of Medical Museums 19: 12-19 October 1939. (3) Reeve, Roy M.: Color Prints by the Carter-Reeve Color Process. The Journal of the Biological Photographic Association 4: 132-136, 1936.

<sup>11</sup> Memorandum, Maj. P. E. McNabb, for The Surgeon General, U.S. Army, 1932. On file in historical records of AFIP.



FIGURE 71.—Maj. Virgil H. Cornell, seventeenth Curator of the Museum, 1933-1935.

Army posts, including service in both World Wars, Major Cornell received from Harvard University the degree of doctor of public health. His Army service is further memorialized in the name of the Cornell Laboratory, the special section of the Medical Museum set aside for the use of medical research workers.

### *The Dental and Oral Registry*

Major Cornell's administration as Curator was signalized by the establishment, in 1933, of the fourth of the registries and the first to be set up as a part of the American Registry of Pathology. The Dental and Oral Pathology Registry added in 1933 was, in a sense, a reactivation of the arrangement of 1895 under which the American Dental Association designated the Museum as the national depository for its dental and oral specimens and materials. Since this designation, there had been periods of activity, and also of inactivity, in carrying out the plan for the deposit of material in the museum. The action taken in 1933 contemplated a different and more active participation of the dental profession in the development of a full-fledged registry, with the working support of a committee of the American Dental Association, headed by Dr. Henry A. Swanson of Washington.

By the end of 1936, the Dental and Oral Pathology Registry had a total of 483 accessions, many of which had been transferred to it from the materials already collected in connection with the earlier registries. The dental registry, however, was not yet "actually functioning" to the same degree of activity as the other registries, even though there had been an official relationship between the Museum and the organized dental profession for 40 years.

In a mimeographed statement, undated but apparently issued in 1939, when there were 808 cases in the Registry, the purposes and intentions of the committee of the Dental Association cooperating with the Museum were outlined along general lines. It was intended to "collect material from, and compile data appertaining to, the pathological disturbances of the hard and soft tissues of the oral cavity \* \* \*. All cases of definite or suspected malignancy \* \* \* will be followed by annual inquiry addressed to the contributor for a period of five years." The purpose of the Registry was to furnish consultation service in such cases as could not be diagnosed locally, and to prepare loan collections consisting of microscopic preparations, photographs, lantern slides, and other material of illustrative cases for use in dental schools, societies, and study clubs. It was the expressed desire of the committee to enlarge and modernize the dental exhibit of the Museum "so that it will be of interest, educational value and historic record second to none."<sup>12</sup>

<sup>12</sup> Ash, James E.: Data for the Preparation of Statement Requested by Dr. E. H. Bruening, undated. On file in historical records of AFIP.

### *More Registries Formed*

Whether because of this appeal for more active cooperation on the part of the profession, or because of the general pickup in military activity following the near collapse of Allied defenses in Europe, the number of new cases received in the Dental and Oral Pathology Registry went up from 95, which it was in 1938,<sup>13</sup> to 226 in 1939, and to 692 in 1940—a sevenfold increase in 2 years.

While the dental and oral section of the American Registry was overcoming the degree of indifference which it met at the outset, two other registries were being successfully launched. In 1935, the ear, nose, and throat cases in the original combined ophthalmic and laryngic registry were separated to become the Registry of Otolaryngic Pathology, under the sponsorship of the Academy which had started the registry system at the Museum.

The addition of two more registries was reported in 1937—a Tumor Registry sponsored by the American Society of Clinical Pathologists, and one in Dermal Pathology sponsored by the American Dermatological Association and now under the sponsorship of the American Academy of Dermatology and Syphilology. With these additions to the list, it appeared to Surgeon General Charles R. Reynolds that "practically all the special fields are covered except neuropathology, and it is possible that this will be taken care of in the near future."<sup>14</sup>

The Surgeon General underestimated the extent to which subdivision of specialties would be carried in the next two decades, as well as the range of additional fields in which pathology would be found basically useful. Neuropathology was indeed "taken care of" in the formation of a registry in 1942, jointly sponsored by the American Association of Neuropathologists and the American Psychiatric Association.

The registries in tumors, originally limited to the lymphatic tumors and those of the bladder, evolved into a total of six tumor registries through the addition of those on Kidney Tumors (1938), Prostatic Tumors (1943), and Testicular Tumors (1959), all sponsored by the American Urological Association; and that on Chest Tumors (1940), sponsored by the American Association for Thoracic Surgery.

In the field of pathology of particular organs, areas, and systems there are, in addition to the registries already mentioned, registries covering Orthopedic Pathology (1943), the Female Reproductive System (1952), and the Gastro-

<sup>13</sup> Annual Report of the Surgeon General, U.S. Army, 1938, p. 182.

<sup>14</sup> (1) *Idem.* (2) Annual Report of the Surgeon General, U.S. Army, 1937, p. 171.

intestinal Tract (1952), all sponsored by the American Society of Clinical Pathologists; Genitourinary Pathology (1947), sponsored by the American Urological Association; Cardiovascular Pathology (1948), with the American Heart Association as sponsor; Hepatic Pathology (1949), under the sponsorship of the American Gastroenterological Society; Pediatric Pathology (1956), with the American Academy of Pediatrics as sponsor; and one of Endocrine Pathology, organized in 1948 and currently unsponsored.

In the broader fields of function and treatments, registries are found in Gerontology (1945), sponsored by the Gerontological Society; Radiologic Pathology (1947), jointly sponsored by the American College of Radiology, the American Roentgen Ray Society, and the Radiological Society of North America; and Nutritional Pathology (1951), sponsored by the American Institute of Nutrition.

The field of veterinary pathology is covered by a registry organized in 1944, with the American Veterinary Medical Association as sponsor (fig. 72). The specific disease of leprosy is the field of a registry, formed in 1950, under the sponsorship of the Leonard Wood Memorial. Most recent in the roster of registries are the ones on Forensic Pathology, formed in 1958, with the College of American Pathologists as sponsor and two formed in the centennial year of 1962—one on Radiation Pathology, under the sponsorship of the U.S. Public Health Service, and another on Geographic Pathology, sponsored by the International Academy of Pathology. Both new registries were formed to meet the increasing need for accurate information as to radiation, in the one case, and as to diseases which may be encountered in lands other than the United States, particularly those in the Tropics.

The registries are a living link between the practitioners of the various medical specialties and the staff of the Museum and its successor organizations—first the Army, and then the Armed Forces Institute of Pathology, in the consultation, education, and research which are their common objectives.

### *Publications of the Registries*

Brig. Gen. George R. Callender, in whose curatorship at the Museum the first of these links was forged, paid tribute to the civilian pathologists who, in the early days of the Registry, "taught the staff Ophthalmic Pathology, in which at the start we were profoundly ignorant."<sup>15</sup> The teaching process

<sup>15</sup> Callender, George R., *Transactions of the American Academy of Ophthalmology and Otolaryngology*, 57 (1953), p. 15.



FIGURE 72.—Maj. T. C. Jones, VC, Registrar, Registry of Veterinary Pathology, Army Institute of Pathology.

worked both ways, with the Museum staff providing study materials for loan to responsible individuals and sets of lantern slides for group teaching. A combination of group and individual instruction were the seminars conducted for several years by the American Society of Clinical Pathologists for which the Institute of Pathology furnished, upon occasion, as many as 37,000 microscopic slides in sets of 25 slides to each of about 1,500 participants in the program.<sup>16</sup>

From these loan sets of slides, the Museum evolved the atlases which were to become one of the strongest ties between the pathologists of the armed services and the medical profession. In addition to the "Atlas of Tumor Pathology," the Registry has published an "Atlas of Angiocardiography" dealing with observation of the heart and great vessels after intravenous injection of an opaque liquid, and an "Atlas of X-Ray Myelography" dealing with X-ray examination

<sup>16</sup> DeCoursey, Elbert, *Transactions of the American Academy of Ophthalmology and Otolaryngology*, 57 (1953), p. 16.

of the spinal cord. Other publications of the Registry include syllabuses on various disease conditions, issued in connection with courses of instruction.

Most of the publications have gone through more than one edition, with revisions and reprinting. "Our original atlases were rather primitive," said Colonel Ash in the course of reminiscent remarks at the 1952 session of the American Academy of Ophthalmology and Otolaryngology. The pages of the first editions were mimeographed and had as illustrations actual photographs instead of printed reproductions. This limited the editions to about 100 copies of each. "I remember so well the job it was to collate the pages," said Colonel Ash. "We had the pages in a series of pigeonholes on the balcony of the old Museum and it was the habit of the few of us who were then at the Museum to stop and collate a book or two on our way back from the rest rooms on the first floor."

Continuing, Colonel Ash said that "after this initial effort of using photographs, we did manage to acquire a little offset reproducing machine with which the second edition was run off \* \* \*. All the time, however, we had in mind atlases that were more comprehensive professionally and technically less amateurish."

### *Advantages of the Registry System*

Speaking from his long experience with the Registry system, Colonel Ash expressed the conviction that "registries, properly sponsored and properly administered, can be very potent factors in education, in research, and in the advancement of the various clinical specialties."

Speaking as a general pathologist, the colonel declared that "much of the pathology of several of the specialties has been developed by clinical specialists frequently not too well grounded in general pathology. On the other hand, general pathologists have very little notion of the eye pathology and not too much of skin, bone, teeth, and so on. Well, it is our idea that with these very specialized activities at the Institute we have helped the specialist in the pathology of his field, but at the same time have importantly stimulated the general pathologist to an interest in these special fields."

Colonel Ash was speaking 30 years after the organization, by General Callender, of the first of the Museum's registries. In those years, 22 registries had been formed. Others were to be added in the decade which followed, bringing the total to 27 at the close of the first century of the life of the Museum and its successor, the Institute. The value of the Registry as an essential part of the activities of the Institute has been abundantly proved by the better

understanding it has fostered between pathologist and clinical specialist and between civilian and military medicine. "Medicine," as Colonel Ash concluded, "owes a great debt to this Academy for being the pioneer in this activity. We should honor Dr. Gradle and General Callender for fostering the idea in its early stages. It has been a great privilege of the Institute and of the Army to have participated in it."<sup>17</sup>

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<sup>17</sup> Ash, James E., *Transactions of the American Academy of Ophthalmology and Otolaryngology*, 57 (1953), pp. 18, 19.

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## CHAPTER XII

### Between the Wars

Chronic difficulties of too little space and too small a staff continued to plague the operation of the Army Medical Museum in the years between the 1918 armistice and Hitler's invasion of Poland, 21 years later.

"The rapid accumulation of materials \* \* \* burdened the museum staff with the labor of preparation" of specimens for several years after the First World War, said Maj. Virgil H. Cornell, addressing the International Association of Medical Museums at its meeting in Washington in May 1933. The combination of the volume of materials for display and the shortage of space had tended to bring about overcrowding of the exhibits, particularly since, "anticipation of the early erection of a new museum had led to the postponement of rearrangement" of materials in the existing building. By 1933, it had become apparent that the new building for which a site had been purchased 11 years earlier was, like many another hopeful project, a victim of the great depression. "In view of a rather indefinite postponement of any new construction," Major Cornell added, "we are attempting to improve the material accumulated with what facilities are at hand. Though no progress has yet been made in the new grouping of exhibits, it is none too early to begin the assembling of materials so that it may be ready for transfer in group arrangement to the new museum when that time comes."

The time when such a transfer and rearrangement was to be made was not to come about until after two wars, three temporary homes, and four removals of the Museum, so that it is no wonder that the idea of making ready in 1933 for an anticipated move to a new building might, in Major Cornell's words, "sound overoptimistic." But, he added, in extenuation of his seeming overoptimism, "we have lived too long in an atmosphere of pessimism, so it is time to reverse the trend."<sup>1</sup>

In the discussion which followed Major Cornell's presentation of the current activities of the Museum, Dr. Howard T. Karsner of Cleveland, professor of

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<sup>1</sup> Cornell, V. H.: Current Activities at the Army Medical Museum. Typewritten memorandum for remarks at International Association of Medical Museums Meeting, 13 May 1933, is on file in historical records of AFIP. Published in: International Association of Medical Museums Bulletin 13: 183-185, 1934.

pathology at Western Reserve University, declared that it demonstrated what could be done by the U.S. Army Medical Corps "in the face of most distressing conditions."

The oral presentation by the Curator was backed up by a tour of the Museum, in which the members of the Association had an opportunity to see in actual use the methods of mounting, lighting, and display which had been presented and discussed earlier in the day. The tour, according to the minutes of the Association, afforded "an extremely interesting and valuable time \* \* \* in the examination of the treasures and resources of this great Collection."<sup>2</sup>

### *Deterioration at the Museum*

The collections of the Museum were indeed great, but there can be no doubt that by the early 1930's, as a result of restricted space and reduced staff, they had deteriorated relatively, if not absolutely.

This was made plain in a special report to The Surgeon General of the Army by Maj. (later Brig. Gen.) Raymond Osborne Dart (fig. 73), who had served as Major Cornell's Assistant Curator and who succeeded him. The new Curator was a native of Kansas, who received his academic education in the University of that State and took his medical degree at Rush Medical College of the University of Chicago. He entered the Army in 1917, and started his first tour of duty as Curator of the Museum in 1935. Before his second tour of duty with the Museum ended, he was to affect profoundly its organization and direction.

The purpose of Major Dart's special report of 19 July 1935 was to point out and make "recommendations for the correction of defects in the organization which have seriously handicapped the successful operation of the institution in the past." Continuing, he wrote:

It is an easily verified fact that the Army Medical Museum has slipped steadily backward from the first rank of medical museums which it occupied immediately after the World War until it is no longer regarded as an important place for the dissemination of information concerning museum technique and display. Meanwhile the very fundamentals of museum display have been changed and other institutions have assumed the leadership in this field which was formerly held by the Army Medical Museum. The reasons for this state of affairs are quite obvious when one considers the history of the organization during the past few years.<sup>3</sup>

<sup>2</sup> *Ibid.*, pp. 184, 185.

<sup>3</sup> Maj. R. O. Dart's report, 19 July 1935, Surgeon General's Office file number 024.9 (Army Medical Museum and Library). On file in historical records of AFIP.



FIGURE 73.—Brig. Gen. Raymond O. Dart, eighteenth Curator of the Museum, 1935-1936; second Director, Army Institute of Pathology, 1946-1949; and first Director, Armed Forces Institute of Pathology, 1949-1950.

Taking up in turn the "four chief non-professional departments," he outlined their condition and described its effects upon the professional work of pathology and scientific research.

The "department of museum display and gross technique" was, he said, the "most important non-professional department" and the one which had "gravitated to the lowest level of all." He continued:

From 1919 to 1922 this department was in charge of Captain C. F. Sylvester, Inf'ty (Res), an excellently trained technician and administrator. During this period he not only supervised the preparation and display of a large amount of war material but published many articles on museum technique of such importance that the Army Medical Museum enjoyed an enviable position of leadership in this field. Since that time the work of this department has been done by a succession of enlisted men from the detachment at Walter Reed General Hospital or the Army Medical School who have been detailed temporarily to the Army Medical Museum for this purpose. Desultory efforts to supervise this work have been made by the Curator and his assistants when time could be spared from other duties, but only the mounting of rare and important specimens could be given this attention and all others requiring more than the simplest technique have of necessity been either destroyed or dumped in large vats in duplicate storage.<sup>4</sup>

### *Inadequate Space, Insufficient Personnel*

Even this attenuated attention to museum display had been further diluted by reduction in staff from three enlisted men to one, who was due to retire for age in a few weeks, with no trained replacement on hand. In the circumstances, preparation of special exhibits for display in the building and at various scientific meetings was "taking many hours of time from the more important duties of the curator and his assistants" and the "undertaking of modernizing the general museum exhibit" was "out of the question."

On the clerical and administrative side, the loss of Capt. Theodore Bitterman, principal clerk, through retirement in 1931 without replacement, "was probably the most serious handicap to the successful administration of the museum." The loss of this experienced administrator had imposed upon the Curator multitudinous details requiring attention.

The Department of Photography, headed by Roy M. Reeve, was "inadequately staffed by a succession of enlisted men of the Medical Department who as soon as they have become sufficiently trained to be of any real help in the advancement of the department have either been transferred elsewhere or have accepted more remunerative positions with civilian institutions." Mr. Reeve's advances in the field of color photography, keeping up the tradition of leadership in the photographic arts established by Dr. Joseph J. Woodward and Dr. Edward

<sup>4</sup> Among the published articles of Capt. Charles F. Sylvester were: (1) Mounting War Collections at the Army Medical Museum. International Association of Medical Museums Bulletin, pp. 49-53, December 1922. (2) Typewriting Labels on Museum Jars. International Association of Medical Museums Bulletin, pp. 83-86, December 1922.

Curtis, and carried on by Dr. William M. Gray, had been done, Major Dart noted, "entirely after office hours and on Sundays and holidays," since routine official duties had "occupied his entire government time."

The Department of Histology, except for the loss of personnel, had "maintained its former status," largely because of the publications and contacts of Mrs. Helenor Wilder and the training which she had given the other members of this unit.

Comparing the period of 1924-26 with 1932-34, and taking the average number of accessions as a fair index of the volume of work accomplished, the special report found that the average had been 2,666 per year in the later period as against 1,990 per year for the earlier. The difference was widened by the fact that approximately 1,200 per year of the earlier accessions were not new cases but simply re-accessions from the old museum, requiring only the paperwork of entering them in the modern system of classification, while in the later period, lack of personnel had precluded the work of re-accessioning, so that the accession figures represented new cases, the majority of which were specimens sent in for diagnosis. The actual work in the 1930's was nearly double that in the period in the 1920's, while the personnel had been reduced from 31 to 21 in all categories. Major Dart continued:

This is an insufficient number to carry on more than the routine and consequently the work on large projects essential to the orderly classification of the museum which have been started in previous years from time to time have been stopped and a large part of the vast museum collection still remains in a hopeless muddle. The very building has degenerated into a shambles of cobwebs and dirt, filled with antique furniture and the debris of worn out equipment and broken exhibits.

### *Working Under Handicaps*

The state of affairs in the Museum proper, characterized as a "breakdown," imposed such a handicap upon the work of the Curator and his professional assistants that they were able to accomplish the routine pathology only with difficulty and had "little time" for the "scientific research with which the officers on duty at the museum are charged by regulation."

Major Dart's views on the state of the Museum were shared in large degree by his successor, Capt. Hugh Richmond Gilmore, Jr. (fig. 74), who served as Acting Curator for a few months in 1935 and 1936. In a memorandum of 5 August 1936, for The Surgeon General, Captain Gilmore made the point that between 1926 and 1936 the volume of work in the institution had increased



FIGURE 74.—Capt. Hugh R. Gilmore, Jr., nineteenth Curator of the Museum,  
1935-1937.

50 percent while the size of the civilian staff had decreased by almost the same percentage.

"Due to this decrease in civilian personnel the Museum exhibits have not been kept up to date," he wrote. "Instead of being a leader in its field the Army

Medical Museum is rapidly becoming nothing but a storehouse of poorly arranged and poorly exhibited pathological specimens \* \* \*. Also the Museum's files and records are six months from being up to date."

The situation of Mr. Reeve, chief photographer and the only civilian employee in the department, was singled out. "If anything should happen to him," the memorandum read, "the department would collapse."<sup>5</sup>

More restrained in their language, but much the same in import, were the Annual Reports of The Surgeon General of the Army for this period in the life of the Museum.

"The continued increase in routine pathological and administrative details has again prevented renovation of the museum exhibits which has been needed badly for a number of years," said Surgeon General Robert Urie Patterson in his annual report for 1934. "The changes made in the main museum in 1933 have but accentuated the need for further work of this type \* \* \*. An attempt to reduce and prevent overcrowding is continually being made but the present quarters necessitate removal of some portion of present exhibits when anything new is added." Personnel was not adequate, The Surgeon General said, to permit the making of the studies which should be made.<sup>6</sup>

In 1935, when the Museum was visited by 81,423 persons, the largest number which had done so in any year up to that time, Surgeon General Charles R. Reynolds spoke again of the great need for revision of the general museum, but said that because of insufficient personnel it could not be done.<sup>7</sup>

The subject was discussed more at length in General Reynolds' report for 1936. "The routine pathology," he said, "is more than sufficient to fully occupy all of the [time of the] officers regularly assigned to duty. However, in addition to the purely professional work, a large amount of time is required for the administration of the museum, the proper conduct of the registries and in teaching the course in pathology at the Army Medical School. All of the officers are required to spend additional hours of duty in the institution and to take part of the routine work to their homes to be done during the evenings and on Saturday afternoons and Sundays. As a consequence, very little time can be spent in the proper care and display of the permanent Museum exhibit."

Revision of the "entire exhibit on a modern basis" was "sorely needed," The Surgeon General said, but shortage of trained technical personnel precluded such a possibility.

<sup>5</sup> Memorandum, Capt. H. R. Gilmore, for The Surgeon General, 5 August 1936. On file in his historical records of AFIP.

<sup>6</sup> Annual Report of the Surgeon General, U.S. Army, 1934, pp. 154, 157.

<sup>7</sup> Annual Report of the Surgeon General, U.S. Army, 1935, p. 149.

The entire permanent exhibit, he said, "must be reviewed, relabeled, and modernized as soon as funds and personnel are available \* \* \*. This Museum must be rearranged so as to tell the story of disease as well as to display its morbid processes. By so doing it would then become one of the greatest teaching institutions in its field."<sup>8</sup>

The picture of the Museum, however, was not all dark. The photographic department, which had been "functioning under the handicap of worn-out equipment, leaky plumbing, and ineffective lighting" had been aided by the installation of new sinks and the rearrangement of its layout.

### *The Edgar Bequest*

New cases for better display of the Museum's great collection of microscopes were procured, thanks to the William F. Edgar Bequest, a fund left to The Surgeon General of the Army, to be expended for the benefit of the Medical Museum and The Surgeon General's Library. The donor of the fund was Dr. William F. Edgar who, in 1849, traveled overland by covered wagon from the Missouri River to Oregon, and thence to California. There, in Los Angeles, he prospered and accumulated a substantial estate. In a will drawn in July 1893, he made the Museum and the Library co-sharers in the residue of his estate, after the payment of numerous bequests to individuals and to charitable, educational, and civic organizations. In 1894, by a codicil to his will, he had changed the division of his bequest to The Surgeon General by providing that the Museum should be the beneficiary of four-fifths and the Library of one-fifth of the fund bequeathed. Dr. Edgar died in 1897, but his estate could not be settled until after the termination of a life estate left to his widow. In 1931, the trustees of the estate sought to make final settlement with the Army, but this could not be done until after the Congress passed a joint resolution authorizing acceptance of the bequest. This was not done until 1933, at which time the bequest amounted to \$18,309, and the four-fifths going to the Museum, to \$14,647. This amount was to be spent for equipment, supplies, and services outlined in War Department General Orders No. 5, dated 8 May 1933, and was to be "available until expended." The largest items of expenditure, by far, were for new display cases, but the Edgar funds made it possible to meet such peripheral expenses of the Museum-Institute as paying the inheritance tax of the State of Pennsylvania on the portrait of Dr. John H. Brinton, the first Curator, which was given to the Museum by Dr. Ward Brinton, his son.

<sup>8</sup> Annual Report of the Surgeon General, U.S. Army, 1936, pp. 145, 147.

The fund dwindled over the years, as was inevitable, but it lasted for a quarter of a century before its final extinction in 1958, after the last \$42.51 had been spent in December 1957.<sup>9</sup>

Lt. Col. James E. Ash returned to the Museum in 1937 for a second tour of duty as Curator—a post which he was to hold for 10 fruitful years. In the first of these years, the Museum attracted more than 97,000 visitors, making it, according to Surgeon General Reynolds' report for 1937, "one of the show places of the Nation's capital"—to which he added the wry comment that it was "about the shabbiest." The largest medical museum in the world "from the standpoint of amount of material," the report said, "suffers considerably by comparison with other museums in Washington, with their fine buildings and modern equipment."<sup>10</sup>

The status of the Museum as the Army's "clearing house for pathology" and the "large number of cases sent into the various registries \* \* \*," said the report, "require the constant application and considerable overtime effort of the limited personnel to keep it moving at a reasonable pace. There is no time for the study and investigation that this material warrants, and the Museum itself can be given only perfunctory supervision." Many exhibits needed revamping and a large percentage of the labels, some of them actually illegible, needed replacing, but "with the present personnel it is possible to make scarcely any appreciable progress in this rejuvenation."

### *Gaining Ground*

Nevertheless, progress was made. The collection of microscopes, ophthalmoscopes, hard-of-hearing aids, and stethoscopes—each collection as comprehensive as any to be found in the world—were exhibited to "much better advantage than they have been heretofore,"<sup>11</sup> using the new exhibit cases purchased out of the Edgar Bequest. During 1938, the main museum room was improved, the work being done by the staff using materials purchased from the limited funds available. To relieve some of the overcrowding, several of the old wooden exhibit cases were retired and the number of exhibits was

<sup>9</sup> Just what led Edgar to make the Army Medical Museum the principal beneficiary of his will does not appear in the will and codicil thereto. Among his other bequests, however, there was one for the sons of Surgeon General Robert Murray, which might indicate an interest on the part of Dr. Edgar in The Surgeon General's office. Material on the Edgar Bequest is in the AFIP historical files, which contain legislative and court proceedings, accounting records, and correspondence between The Surgeon General and the trustees under the Edgar will. Uses made of the bequest are mentioned in the Annual Reports of the Surgeon General, U.S. Army, for 1936, pp. 145, 146, and for 1937, p. 170.

<sup>10</sup> Annual Report of the Surgeon General, U.S. Army, 1937, pp. 171-172.

<sup>11</sup> *Ibid.*, p. 170.

reduced, it having been found that the display had a "greater appeal to the laity if it is not confusingly overcrowded." The great bulk of the collections were relegated to storage, but in such form that the material was always available for study. The Museum had taken its place "as one of the more popular sights in Washington," having had, for the first time, more than 100,000 visitors in a year.<sup>12</sup>

Substantial evidences of ground gained were found in the number and distinction of the medical collections given to the Museum in the years of its resurgence (fig. 75). Important contributions during 1938 included a collection of models, pictures, and actual specimens covering comprehensively the history of appliances used in maxillofacial surgery, assembled by Dr. George Morris Dorrance of Philadelphia, and described as "an unique collection of great historic value"; a collection of historic and modern bronchoscopes and esophagoscopes devised by Dr. Chevalier Jackson of Philadelphia and his son, and of hundreds of foreign bodies removed by their use; a collection of models and drawings developed in the postgraduate course in otolaryngology at the Harvard Medical School under the supervision of Dr. Harris Peyton Mosher, together with material representing Dr. Mosher's original research in diseases of the esophagus; and several types of artificial larynxes, with which persons who have lost their larynx can talk, presented by Dr. LeRoy Allan Schall of Boston.

The most notable gift of this period was the world-famous Huntington collection of anatomical material, perhaps the largest collection in the world in its field. The collection had been gathered by Dr. George Sumner Huntington of the College of Physicians and Surgeons of Columbia University, the first full-time professor of anatomy in this country, in the years between 1889 and his death in 1925. It includes some 5,000 specimens, illustrating the form, development, and evolution of most parts of the body in many species, including man. These specimens, presented to the Museum for display and study, were an important educational resource of the Museum, particularly in the field of comparative anatomy.<sup>13</sup>

### *Prospects for a New Home*

Still more encouraging for the days ahead was the passage by Congress of a bill authorizing the Secretary of War to construct a new building to "replace

<sup>12</sup> Annual Report of the Surgeon General, U.S. Army, 1938, pp. 179, 181.

<sup>13</sup> Memorandum, Lt. Col. J. E. Ash, for Colonel Harden, Surgeon General's Office, 5 January 1939. Copy on file in historical records of AFIP.



FIGURE 75.—Maj. Harry A. Davis, after 28 years of military service, served the Museum for 21 years, first as entomologist and later in historical work in the course of which he gave special attention to the Museum's collections of medical instruments.

the present Army Medical Library and Museum Building." The new building was to be put up in the District of Columbia, on a site to be chosen after consultation with the National Capital Park and Planning Commission, and subject to approval by the National Park Service. The total cost of the new building was not to exceed \$3,750,000, but the bill carried no appropriation for this or any other amount.<sup>14</sup>

The dream of a new building had persisted ever since Col. William O. Owen's time as Curator, and even before. In earlier days, the dream was for a building on the Washington Mall; in more recent times, as the great Army Medical Center developed around the Walter Reed General Hospital, the favored site had come to be one in the vicinity where, indeed, additional lands had been purchased for the purpose of housing the Museum and Library.

This point of view was vigorously and thoughtfully presented by Dr. Howard T. Karsner in letters to congressional and executive department leaders. Writing in his capacity as secretary of the American Association of Pathologists and Bacteriologists, and as chairman of the National Research Council's committee on the American Registry of Pathology, Dr. Karsner declared that even in their present state the Museum and Library "have proved of the greatest value to the medical profession of the United States" as "living, active, useful collections rather than mere repositories. Numerous medical research projects would have been sadly handicapped had it not been for the library and museum. The same would be true of the future if the work of these institutions were in any way limited."

As to cost, Dr. Karsner said that "These great institutions" were operated at a "relatively much smaller cost than could be expected in any other circumstances." His familiarity with the Library and the Museum and his extensive experience in university work convinced him that no possible combination with other national libraries and museums, unless they were of identical objectives, would result in any further economy, while it was his opinion that any such combination would lead to "deterioration of the collections and of their usefulness."

The doctor strongly favored the Walter Reed site, feeling that it would form a highly desirable adjunct to the work of the hospital and would aid and improve the teaching in the Army Medical School and associated schools already located in the Walter Reed area.

<sup>14</sup> H.R. 10455, approved 15 June 1938, Public Law Number 611, chapter 384, U.S. Statutes at Large, 75th Congress, 3d session, 1938, volume 52, p. 684.

In concluding, Dr. Karsner wrote, "No words can overemphasize the importance to the Nation of the preservation of the integrity of these two institutions as part of the Army organization and of their proper and adequate housing at the Army Medical Center."<sup>15</sup>

### *A New Building—Where and When?*

In the work of securing favorable action by Congress on the bill authorizing the new building, the medical profession of the country was foremost. Dr. Karsner's letter was typical of the more than one hundred letters, from distinguished doctors, which were submitted to the committees of the House and the Senate when, in 1938, those bodies had hearings on the identical bills introduced by the chairmen of the Committees on Military Affairs of the Senate and House.

In addition to these individual recommendations, the American Medical Association "officially endorsed the movement by authority of the House of Delegates," a circumstance which recalled to the editor of the *Journal of the American Medical Association* the fact that the Association had "played a great part in obtaining the legislation for the old building" which had housed the Museum and the Library for 55 years and had "contributed with equal force in obtaining the new,"—thereby treating the prospective new building as if it were an accomplished fact and not a project which was to take another 15 years of struggle and delay so far as the Museum was concerned, and an even longer time for the achievement of the new Library.

On 18 June 1938, in an editorial published only 3 days after the Presidential approval of the authorization bill, the J.A.M.A. exulted that "at last the world's mightiest collection of medical literature and one of the largest of medical museums will be given adequate quarters. The medical profession," the editorial went on to say, "may congratulate itself on the enactment of the bill to authorize the new building."

"But," the editor added, "this is not enough. Under our legislative procedure the appropriation called for by the authorization bills must be obtained. The Committee on Appropriations of the Senate and House of Representatives will shortly consider this. If we want the new building built now—and the need is nothing less than urgent—we must let our representatives in both houses of Congress know of our desire. The foundation for the building is already

<sup>15</sup> Letters, Dr. Howard T. Karsner, various dates in August 1933. Copies on file in historical records of AFIP.

laid; not the foundation of stones and mortar but that of Congressional approval."<sup>16</sup>

Efforts to build upon this foundation of congressional approval were promptly forthcoming, when President Franklin D. Roosevelt included in his budget for the fiscal year ending 30 June 1941, submitted on 4 January 1940, an item of \$600,000 for preliminary expenses in connection with the new building.

Support for the adoption of this item in the appropriation bill included an article by Joseph M. Lalley, in the *Washington Post* of 11 February 1940, entitled "Neglected Treasures," which thus described "the plight of the Army Medical Library and Museum":

\* \* \* Two years ago Congress authorized the expenditure of \$3,750,000 for the construction of a new building for the Army Medical Library and Museum. This benignant gesture was merely an imprimatur. The Secretary of War is now free, within the limits of that sum, to have a new edifice built for the library and museum whenever and if ever he gets the money. He has not got it yet. The new War Department budget, however, does contain, among the Surgeon General's estimates, a special item of \$600,000 for the acquisition of a site. But with Congress in its present temper, and with the estimates for national defense tremendously swollen, the fate of this item appears precarious.

All the same, it is unlikely that many high officers outside the Medical Corps, give any great attention to the concerns and difficulties of the library and museum. None of them, of course, would dream of parting with it. But when, in the course of the hagglings with the Congressional committee, it may mean the difference between a few extra tanks or bombing planes there may be a temptation to let the library wait another year for a new home. But it has already waited too many years, and can wait no longer.

Adoption of the budget item in the War Department appropriation bill was urged by the *Washington Post* in an editorial of 10 February 1940, entitled "Priceless and Unique." The estimate of \$600,000 for the purchase of a site and the preparation of plans for "a new building which will more adequately house the Army Medical Library and Museum" was termed "modest" in amount and pressing in importance.

"Whatever the needs of other forms of national defense, there is no part of the current Army estimate more worthy of public support than this relatively tiny item," the editorial said. "Nearly two years ago Congress authorized a new building to replace the present antiquated Army Medical Museum, erected in 1887. Economy of a glaringly penny-wise pound-foolish variety has heretofore blocked action under this authorization. In view of the long delays and

<sup>16</sup> Editorial entitled, "Army Medical Museum and Library." *Journal of the American Medical Association* 110: 2084-2085, 18 June 1938.

the urgent need in providing this new building, the least that can be done at this session is to make a start in a matter so patently overdue.”<sup>17</sup>

Between the time of submission of the estimate and action upon it, the war in Europe passed from a period of comparative inactivity to the furious “blitzkrieg,” with the German invasion of Denmark and Norway in April 1940, the invasion of the Low Countries in May, the disaster at Dunkirk in the last week of that month, all culminating in the fall of France in mid-June.

Against this background of rapidly moving events and precipitately deteriorating situations, the proposed appropriation was considered in the Congress.

### *Action Delayed*

On 3 April 1940, the Appropriations Committee of the House of Representatives recommended the adoption of \$130,000 of the budget item, being that portion of the expenditure proposed for the drawing of plans and preparing of specifications, and recommended against the \$470,000 included for the purchase of a site for the new building.

In the 1938 authorization, Congress had assumed that the new building was to be erected on Government-owned land, presumably adjacent to the Walter Reed Army Medical Center. When it became generally known that the site of the new building was to be in that region, then somewhat remote, “great opposition developed from the rank and file of the civilian medical profession of the country” and this influence, among others, led to “the abandonment of the plan to move \* \* \* to the Army Medical Center and a return to the idea of constructing it near its present location.”

The National Capital Park and Planning Commission had to be consulted under the terms of the act of authorization; it had other plans, however, and recommended a location east of the Library of Congress, and Surgeon General James C. Magee acquiesced in that decision.<sup>18</sup>

The Appropriations Committee, however, felt that the whole question of a site was out of order, since the preceding Congress, in passing the authorization act, had not contemplated purchase of a site but had assumed that the building was to be put on Government-owned land. The House accepted the Committee’s interpretation of the situation but the Senate, when the bill

<sup>17</sup> The article and editorial are quoted in: Congressional Record, Appendix, 76th Congress, 3d session, volume 86, part 14, pp. 1336, 1337.

<sup>18</sup> Memorandum of Maj. Gen. James C. Magee, The Surgeon General, U.S. Army, 27 April 1940. On file in Record Group 112, Surgeon General’s Office file number 631.1 (Army Medical Museum and Library), from the records of the National Archives.

came before that body, restored the full \$600,000 item by amendment 78. The matter came before the House again on 10 June, when Representative Ross Collins of Mississippi urged acceptance of the Senate amendment, while Representative John Taber of New York opposed its adoption, taking the stand that there were more pressing military needs. The House supported Mr. Taber's view and "disagreed to the amendment of the Senate numbered 78."<sup>19</sup>

The bill, with its appropriation of \$130,000 for getting on with the preliminaries of construction, passed and was approved on 13 June 1940—by coincidence, the day before the German armies entered Paris.<sup>20</sup>

Acting under the authority granted, the Secretary of War and The Surgeon General selected as architects for the building the New York firm of Eggers and Higgins, whose works included the National Gallery of Art, then nearing completion. Preliminary plans, submitted in February 1941, were gone over by a consulting board consisting of the incumbent Librarian, Col. Harold W. Jones, the incumbent Curator, Lieutenant Colonel Ash, a former Librarian, Col. James M. Phalen, a former Curator, Col. George R. Callender, and Lt. Col. John R. Hall of the Surgeon General's Office. Early difficulties as to the division of space between library and museum activities were ironed out and, at a meeting of the consulting board on 11 August 1941, the plans in general were approved.<sup>21</sup>

As plans were developed and costs were rising, it became obvious that the amount authorized in the 1938 legislation was inadequate. Consequently, H.R. 5146 to authorize the purchase of a site and to increase the total authorized expenditure from \$3,750,000 to \$4,750,000 was introduced in and passed the House, and was amended by and passed the Senate. On 15 September 1941, the amended bill was brought up for action in the House, under the sponsorship of the chairman of the Military Affairs Committee, Andrew J. May of Kentucky. Representative Robert F. Rich of Pennsylvania asked whether it was "absolutely necessary" to erect the building "now, when materials cost so

<sup>19</sup> Congressional Record, 76th Congress, 3d session, volume 86, part 7, pp. 7895 ff.

<sup>20</sup> U.S. Statutes at Large, 76th Congress, 2d and 3d sessions, volume 54, part I, chapter 343, p. 363, 13 June 1940.

<sup>21</sup> (1) Letters, Robert P. Patterson, The Assistant Secretary of War, to Maj. Gen. James C. Magee, 2 December 1940; Colonel Birdseye, for The Quartermaster General, to Messrs. Eggers and Higgins, 12 December 1940; Daniel Paul Higgins to Colonel Birdseye, 16 December 1940; and drafts of letters to Eggers and Higgins, approved by The Surgeon General, 3 January 1941. All on file in Record Group 112, Surgeon General's Office file number 631.1 (Army Medical Museum and Library), from the records of the National Archives. (2) Letters, Lt. Col. J. E. Ash to Col. H. W. Jones, 10 February 1941 and Lt. Col. J. E. Ash to Maj. J. C. Magee, 13 May 1941; Office Order 119, Surgeon General's Office, 21 May 1941; Report of Meeting of the Consulting Board, 11 August 1941. All on file in historical records of AFIP.



FIGURE 76.—Architects' drawing of a new home for the Library and Museum, authorized by Congress in September 1941, just before Pearl Harbor, an event which brought an end to the plan.

much and labor is so scarce," suggesting that construction "ought to be postponed until some more appropriate time" after the national defense program then underway was ended.

Mr. May urged the necessity of the new building but in effect accepted the position taken by Mr. Rich, pointing out that the bill was merely an authorization, without an appropriation, and expressing the belief that nothing further, other than the preparation of plans then underway, was to be done about the matter "until after the emergency is over." Unanimous consent was accordingly given to consideration of the bill, which was passed and, on 24 September 1941, was signed by the President (fig. 76).<sup>22</sup>

Representative May's estimate of the lack of effect of passage of the increased authorization upon actual construction proved to be well founded. Work on plans continued until in December, when the events at Pearl Harbor transformed the "emergency" into active participation in full-scale, all-out, unlimited war—a state of affairs in which, by tacit consent, the Nation's medical treasures of the Library and Museum would continue to be housed in a "rather decrepit old red brick building" to whose "dingy halls \* \* \* the world's foremost medical scholars" would continue to come—as they had been coming for more than half a century.<sup>23</sup>

<sup>22</sup> Congressional Record, 77th Congress, 1st session, volume 87, part 7, pp. 7122, 7214, 7378, 7415, 7571. (2) Public Law Number 256, chapter 418.

<sup>23</sup> (1) Editorial: American Journal of Public Health and the Nation's Health 26: 930-932, September 1936. (2) Editorial: British Medical Journal, 26 October 1935. (3) Editorial: The Military Surgeon, volume 78, April 1936.

## CHAPTER XIII

# Pathology Worldwide

Decrepit the old building may have been, and dingy, too, but it was in its crowded and cramped quarters that Col. James E. Ash and the Museum staff somehow managed to carry the heavy wartime routine of pathology services for an Army which was expanding explosively, not only in numerical strength but also in geographic dispersion throughout the world, and at the same time to turn out a program of productive research which, in view of the conditions, was nothing short of prodigious.

The rapid expansion of the Army dates from 16 May 1940, when President Franklin D. Roosevelt, addressing the Congress on the fast-deteriorating military situation in Europe, recommended the appropriation of an extra billion dollars for purposes of defense. The strength of the Army was then under 270,000. By the time of the attack on Pearl Harbor, it had grown to 1,680,000, a sixfold growth which continued until, at the end of hostilities in August 1945, it numbered more than eight million men and women.<sup>1</sup>

Such an increase in the military population, which was the primary constituency served by the Museum, was enough in and of itself to have called for an increase in the Museum's peacetime staff. To this multiplication of the numbers to be served, however, there was added another factor in the buildup of the pathological workload—a change in the applicable Army regulations. Since 1922, these had been set forth in the War Department's AR 40-410, which "solicited" the sending in of pathological materials and "requested" Medical Department personnel to "make special efforts to procure and forward the desired specimens." In August 1942, AR 40-410 was superseded by another bearing the same number which was shorter, broader, and sharper than the original 1922 regulation. The 1942 regulation did not "solicit" support or "request" Medical Department cooperation. Instead, it spoke in the imperative,

<sup>1</sup> Figures for June 1940, December 1941, and August 1945, on file in the Adjutant General's Office, Department of the Army.

saying rather that autopsy, biopsy, and specified surgical materials "will be forwarded" as directed.<sup>2</sup>

The combined effect of a rapidly increasing Army and more positive directions for the submittal of pathological specimens was to increase the workload of the Museum to 3,500 or 4,000 "cases" per month—as many as had been handled in a full 12 months before the expansion began. By 1943, autopsy materials and records were flowing into the Museum at the rate of 15 per day, a figure which increased before the end of the war to the point where "we were receiving at the Institute an average of over 50 autopsies a day and as many significant surgical specimens."<sup>3</sup>

In 1945, the year in which hostilities ended, records and tissues from nearly 19,000 autopsies were received at the Museum, along with more than 20,000 surgical specimens.<sup>4</sup> Colonel Ash spoke truly when he said, "the trickle of materials of a decade ago has swollen into a torrent."<sup>5</sup>

### *Regional Centers for Histopathology*

The "torrent" might have overwhelmed the Museum staff if, during the period of preparedness before the United States became an active belligerent, there had not been thought out a planned decentralization of the pathological facilities and activities of the Army.

On 11 December 1941—4 days after Pearl Harbor—the new system was put into effect by The Surgeon General's Circular Letter No. 121, subsequently modified in Circular Letter No. 141, of 29 July 1943, and repeated in the War Department's Technical Bulletin 99, issued 11 March 1944.

The new system deployed the limited number of trained pathologists at the points where they would be able to serve most effectively. It was recognized that there simply were not enough pathologists to go around among all the medical installations, but there were enough to staff regional centers for his-

<sup>2</sup> (1) Army Regulations No. 40-410, paragraphs 6, 8, and 9, 18 January 1922. (2) Army Regulations No. 40-410, paragraphs 3-7, 3 August 1942.

<sup>3</sup> (1) Ash, James E.: The Army Medical Museum in This War. An address before the Section on Pathology, Southern Medical Association, 37th Annual Meeting, Cincinnati, Ohio, 16-18 November 1943. Published in Southern Medical Journal 37: 261-266, May 1944. (2) Ash, J. E.: Tumor Registries of the American Urological Association. An address before the Association, Cincinnati, Ohio, 25 July 1946. Copy on file in historical records of the AFIP. (Hereinafter cited as American Urological Association Address.)

<sup>4</sup> Lucké, Balduin: The Army Institute of Pathology During World War II. The Military Surgeon 99: 365, November 1946.

<sup>5</sup> Ash, J. E.: The Army Institute of Pathology. (Tenth Annual Harrison S. Martland lecture delivered before the Essex County Anatomical and Pathological Society, Newark, N.J.) Abstract published in Bulletin of the U.S. Army Medical Department 4: 718, December 1945.

topathology. These centers—there were 18 of them altogether, with one or more in each of the nine Service Commands into which the United States was then subdivided—were set up mostly in the laboratories of named general hospitals.<sup>6</sup>

To these centers, nearby posts and installations sent materials on which diagnostic assistance was required. After screening out those cases on which there were no serious diagnostic doubts or difficulties, the regional centers forwarded to the Medical Museum “such surgical cases as have a possible future administrative or ‘follow-up’ value, particularly tumors and those cases requiring final or confirmatory diagnosis.” Also forwarded to the Museum were all autopsy materials, including the protocols or records, as well as the tissues involved.<sup>7</sup>

As American Forces spread to theaters of active operations, the system of channeling pathological materials and information spread with them, with the chief surgeon of each oversea theater designating a medical general laboratory, usually at the principal general hospital in the area, to serve as its histopathologic center. These centers were called upon to gather and forward the same classes of materials as the regional centers at home, and in addition were asked to send in materials and information about the disease encountered among the peoples of foreign lands, “inasmuch as ‘geographic pathology’ has become of great importance to the armed forces.” The materials sought in this connection included not only tissues from surgery and autopsies but also “insect species that act as disease vectors or are suspected of doing so, poisonous plants, poisonous snakes, and other material of medico-military interest”—a term which covered the vast variety of conditions to be encountered by an Army whose troops were serving in every sort of terrain and climate, all over the world.

At the center of this worldwide network of channels, through which pathological materials and records flowed in and diagnostic information flowed out, was the Museum (fig. 77). “The U.S. Army is the only armed force in the world that had this centralization of pathology,” said Colonel Ash, “and it has resulted in the largest single accumulation of material in the history of

<sup>6</sup> Histopathologic centers were established at: Lovell General Hospital, Fort Devens, Mass.; the Second Service Command Laboratory, Federal Office Building, New York City; Valley Forge General Hospital, Phoenixville, Pa.; Lawson General Hospital, Atlanta, Ga.; Stark General Hospital, Charleston, S.C.; Station Hospital, Fort Bragg, N.C.; Thayer General Hospital, Nashville, Tenn.; Billings General Hospital, Fort Benjamin Harrison, Ind.; the Sixth Service Command Laboratory, Fort Sheridan, Ill.; O'Reilly General Hospital, Springfield, Mo.; Fitzsimons General Hospital, Denver, Colo.; Brooke General Hospital, Fort Sam Houston, Tex.; William Beaumont General Hospital, El Paso, Tex.; Army and Navy General Hospital, Hot Springs, Ark.; LaGarde General Hospital, New Orleans, La.; Hoff General Hospital, Santa Barbara, Calif.; Letterman General Hospital, San Francisco, Calif.; and Barnes General Hospital, Vancouver, Wash.

<sup>7</sup> Circular Letter No. 141, Surgeon General's Office, 29 July 1943.

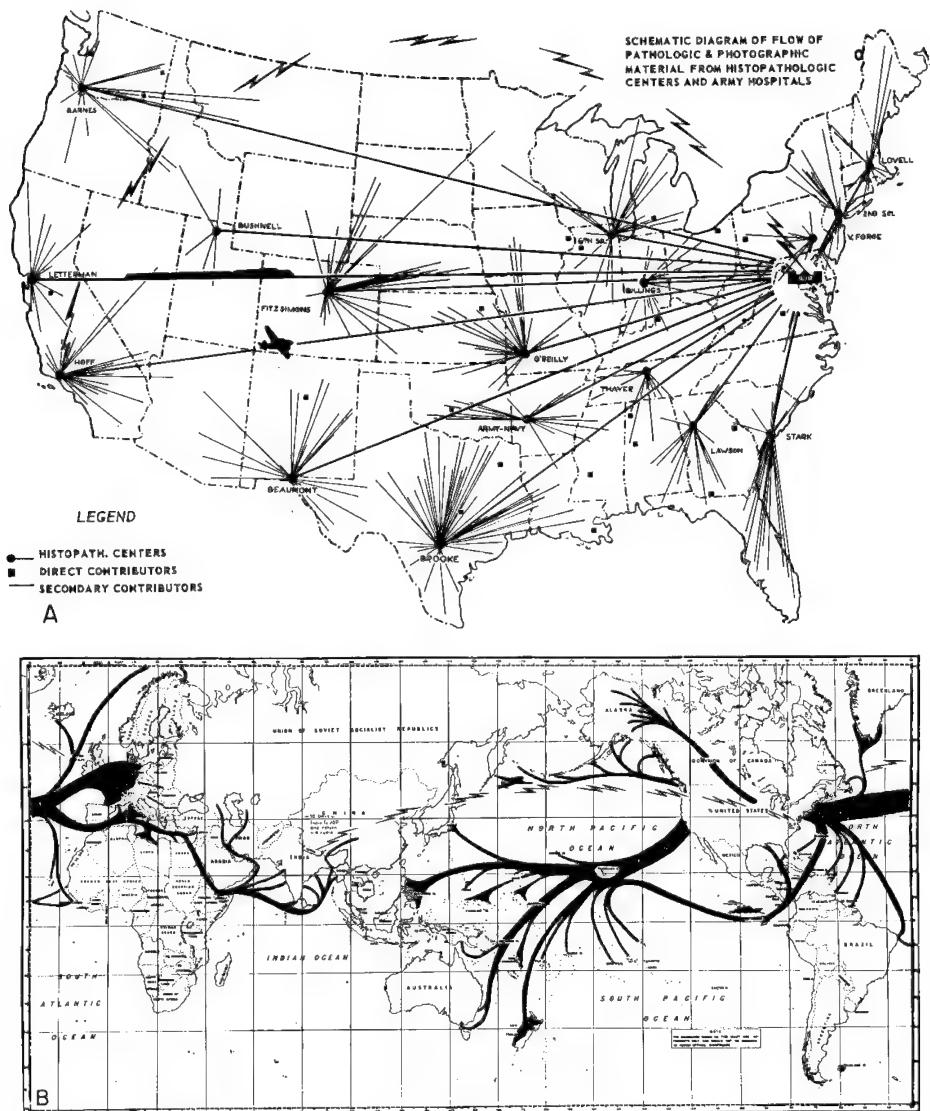


FIGURE 77.—Schematic representation of the flow of pathological materials during World War II. A. Continental network, to and through Histopathologic Centers on the way to the Institute. B. Worldwide flow to and from the Medical Museum.

medicine. It is particularly valuable because it has given us the opportunity to study not only the pathology incident to warfare but also that arising from the varied environments to which our soldiers were subjected—from the Arctic to the tropics.”<sup>8</sup>

<sup>8</sup> American Urological Association Address.

The basic idea, Colonel Ash said, was "to concentrate all the significant data and material pertaining to pathologic processes occurring in the Army at the Medical Museum, where it will be available for current professional use and future scientific investigations, for teaching, and for historical purposes."

Still another value of this centralization of records and materials grows out of the exceptional mobility of military life. Frequently, it is necessary or desirable to transfer military patients from one hospital to another—as for example, from a post hospital to a more commodious and better-equipped general hospital, or perhaps to a hospital with unusual facilities for the treatment of a particular disease. In any such case, the Museum would have the tissues, the diagnosis, and other pertinent facts, and could furnish from its files "a life history of such a patient's condition, a record of his treatment, and of the outcome of the disease," all readily and quickly available in a single file.<sup>9</sup>

### *Increase in Personnel*

The tremendously increased workload at the Museum made necessary substantial increases in the staff. From the prewar number of three, the number of professional pathologists at the Museum went up to more than 20. Twelve of them remained at the Museum for more than 2 years; eight for more than 3 years. The average number employed at any one time was 14. In addition to the staff of professional pathologists, the work of the several departments of the Museum required the services of some 30 enlisted men and Wacs, and about 60 civilians.<sup>10</sup>

Reinforcing this full-time staff was a succession of distinguished resident consultants who were invited by the Curator to participate in the work of the Museum for brief periods. Seventeen such consultants were at the Museum, first and last, staying for periods of from 2 weeks to 3 months, in which they acted as advisers in the workup of pathological materials and participated in the researches which were going forward.<sup>11</sup>

Overwhelmingly, the greater part of the activities of the organization, still entitled the Army Medical Museum, had come to center in the pathology service. For example, in a list issued at the beginning of 1944, 37 out of 47 projects currently underway were in the field of pathology, while 11 of the 17 projects shown

<sup>9</sup> Ash, *Southern Medical Journal*, 37 (1944), pp. 261-266.

<sup>10</sup> (1) Lucké, *The Military Surgeon*, 99 (1946), p. 367. (2) Brochure, Army Institute of Pathology—Army Medical Museum, prepared by Technical Information Division, Surgeon General's Office, first printing 1 July 1945; reprinted December 1945 and 1 July 1946, p. 1. (Hereinafter cited as Brochure, AIP-AMM.)

<sup>11</sup> (1) Correspondence, Colonel Ash to Surgeon General's Office, 21 August 1943 and Surgeon General's Office to Colonel Ash, 25 August 1943. (2) Lucké, *The Military Surgeon*, 99 (1946), p. 367.

as having been recently completed dealt with pathology.<sup>12</sup> As Colonel Ash said, the organization "suffered under the connotation museum, an institution still thought of by many as a repository for bottled monsters and medical curiosities. To be sure, we have such specimens. As is required by law, we maintain an exhibit open to the public but in war time, at least, the museum *per se* is the least of our functions, and we like to be thought of as the Army Institute of Pathology, a designation recently authorized by the Surgeon General."<sup>13</sup>

### *A New Name for a New Organization*

This authorization, made informally in the closing weeks of 1943, is reflected in the printed heading of Office Order No. 18 of the Curator, dated 1 January 1944, which outlines the functions of the organization and assigns responsibilities for the various segments of activities. On this heading, the new name of "Army Institute of Pathology" appears as a subordinate division of the Army Medical Museum—a relationship which was to be reversed 2 years later when the "Army Institute of Pathology" was to become officially and formally the general designation of the entire operation, with the Army Medical Museum as a subordinate division. Under the new dispensation, the head of the whole organization was known as the Director instead of the Curator.

The organization outlined in Office Order No. 18 of the Army Medical Museum consisted of four divisions or "services"—Administrative, Professional, Photographic and Medical Arts, and Museum and Medical Arts.

The Museum proper was relegated to the status of a subdivision of the Photographic and Medical Arts Service, headed by Capt. Frank H. Netter. Besides the Museum, this service included all forms of medical art, including photography other than clinical and motion pictures. The latter types of photography were assigned to the Museum and Medical Arts Service, headed by Capt. Ralph H. Creer. Organization and training of units to be sent overseas were assigned to the Museum and Medical Arts Service—to be known for short as the "MAMA's" (fig. 78).

Lt. Col. Balduin Lucké, in civil life a distinguished Philadelphia pathologist and professor of pathology at the University of Pennsylvania, was named in the office order as Deputy Curator and also as the officer heading up the Professional Service, which was primarily the pathological division of the Museum-

<sup>12</sup> Memorandum to Officers, Army Medical Museum, Army Institute of Pathology, and Photographic and Medical Arts Service, 3 January 1944. On file in historical records of AFIP.

<sup>13</sup> Ash, *Southern Medical Journal*, 37 (1944), pp. 261-266.



FIGURE 78.—A unit of the Museum and Medical Arts Department of the Museum, in World War II, is photographed while photographing a diseased native of a tropical isle.

Institute. The division was responsible for reviewing and reporting on specimens sent in currently, and also for research and education in the field of pathology.

### *Scientific Investigations*

Studies in progress and those recently completed, listed in a memorandum to officers issued by the Army Institute of Pathology and the Photographic and Medical Arts Service on 3 January 1944, indicate the wide range of the research and educational activities of the staff of what was still known officially as the Army Medical Museum.

By the end of the war, the results of 62 of these investigations had been published—two of them in the new medical books, six in revisions and reissues of the Museum's atlases of the pathology of particular organs, and the others in articles in the scientific medical press. Fifteen of these published articles appeared in the *American Journal of Pathology*; 11 in *The Military Surgeon*; 4 each in the *Archives of Pathology* and the *American Journal of Orthodontics and Oral Surgery*; and the remaining 20 in 15 other medical journals. In

addition to the articles which had been published by 1 July 1946, 14 others had been completed and were ready for publication, and 28 more were in progress.<sup>14</sup>

These scientific investigations were not "mere academic research projects," Dr. Howard T. Karsner wrote in 1944, but were in large part such studies as had "immediate application."<sup>15</sup> As an example of immediacy of application, Dr. Karsner cited the part played by the Medical Museum in scotching the subterranean rumor that the outbreak of hepatitis in the Army in the spring and early summer of 1942 was actually yellow fever following vaccination against that disease. Color of support for the rumor was found in the undenied fact that troops were being given "shots" for yellow fever, and the further fact that the most obvious and visible symptom of both yellow fever and hepatitis was the jaundiced hue cast by both over the sufferers.

The diseases, however, were very different in their effects. Hepatitis, while it is exceedingly debilitating and distressing to its victims, is not a disease of high mortality, the death rate being less than three-tenths of 1 percent of hospitalized cases. In disablement and deadliness, hepatitis was not to be compared with yellow fever, but there was enough plausibility in the rumor that "yellow jack" had returned to the Army through the hypodermic syringe of the surgeon to make it damaging to morale.

Fortunately, before the alarmist rumor was well spread, the Medical Museum had completed its special study of three early fatal cases of hepatitis—one each from Fort Belvoir, Va.; Camp Callan, Calif.; and Walter Reed General Hospital—and had circulated its findings to the laboratory chiefs of Army hospitals for the information of "officers who may not have had an opportunity to study at first hand the pathology of fatal hepatitis." The findings were accompanied by clinical notes and microscope slides.<sup>16</sup>

"Because of the current interest in yellow fever," there went with the reports like information about an authentic case of yellow fever which had caused the death of a young man in Brazil in 1937. As Colonel Lucké (fig. 79), who had prepared the notes and materials on both diseases, pointed out, the differences between them, when seen under the pathologist's microscope, are so obvious that "it will be seen at once" that they are not the same. The putative epidemic of yellow fever was demonstrated to be hepatitis—a demonstration which was clinched by continued study, the results of which are embodied in

<sup>14</sup> Brochure, AIP-AMM, 1 July 1946.

<sup>15</sup> Karsner, Howard T.: Army Medical Museum; Army Institute of Pathology. Journal of the American Medical Association 124: 711, 11 March 1944.

<sup>16</sup> Memorandum, Col. J. E. Ash, to Chief of Laboratory Services, 22 July 1942. Copy on file in historical records of AFIP.



FIGURE 79.—Maj. Gen. Norman T. Kirk, The Surgeon General of the Army, presents to Col. Baldwin Lucké the Legion of Merit for distinguished service to the Museum-Institute, as Mrs. Lucké looks on.

Colonel Lucké's articles on "The Pathology of Fatal Epidemic Hepatitis," based on 125 fatal cases, and on "The Structure of the Liver After Recovery from Epidemic Hepatitis," based upon post mortem examinations of 14 patients who had recovered from the disease but had thereafter succumbed to some other disease or accident.<sup>17</sup>

Yellow fever was but one of the tropical diseases which gave concern to the U.S. Army in the war. Indeed, as Colonel Ash wrote, tropical medicine

<sup>17</sup> (1) Lucké, B.: Pathology of Fatal Epidemic Hepatitis. *American Journal of Pathology* 20: 471-593, May 1944. (2) Lucké, B.: The Structure of the Liver After Recovery From Epidemic Hepatitis. *American Journal of Pathology* 20: 595-619, May 1944. Publication of the 36 plates in color and black-and-white was made possible by a grant to the *Journal* from the International Health Division of the Rockefeller Institute. The hepatitis was traced to certain batches of vaccine which used as a stabilizer human serum containing the virus of hepatitis. The epidemic stopped after the use of human serum was discontinued. *In Medical Department, United States Army. Preventive Medicine in World War II. Volume III. Personal Health Measures and Immunization.* Washington: U.S. Government Printing Office, 1955, pp. 306-312, and *Medical Department, United States Army. Preventive Medicine in World War II. Volume V. Communicable Diseases Transmitted Through Contact Or By Unknown Means.* Washington: U.S. Government Printing Office, 1960, pp. 411-432.

"held a place of special importance, not only medical but military, with our troops stationed in all quarters of the globe \* \* \*. Almost overnight, the diseases of the tropics became an urgent specialty, where previously the general pathologist had occasion for no more than superficial knowledge." "The medical personnel of the armed forces," said Colonel Ash, "had to be instructed in at least the basic features as quickly as possible."

### *The Attack on Tropical Diseases*

To meet this emergency, Dr. Sophie Spitz, a brilliant young woman pathologist serving as a contract surgeon, "prepared comprehensive study sets from the large collection of material that had come to the Institute from widespread tropical installations, which were distributed particularly to the Army pathologists. In order to reach a wider circle, she prepared other collections of tissues from tropical diseases which went out to nearly all medical schools in the United States and Canada, as a means of alerting students to the possibilities in this special field."<sup>18</sup>

This activity was undertaken by the Museum in mid-1943 at the request of the Committee on Pathology of the National Research Council, with funds supplied by the John and Mary Markle Foundation, through the American Foundation for Tropical Medicine. The purpose was to collect and distribute pathological material on tropical diseases to the undergraduate medical schools of the United States and Canada, with the hope that it would stimulate interest and facilitate teaching in tropical medicine. As part of a preliminary survey, a circular letter was sent to the professor of pathology of every American and Canadian school of medicine, listing the material available and asking that only items actually needed should be selected. The materials offered consisted of blocks of tissues of organs affected by a dozen diseases, ranging alphabetically from amebic dysentery to yaws, together with case records and lantern slides or, in some cases, stained sections for microscopic examination.

The response to the letter was enthusiastically affirmative, with 82 schools answering promptly and nearly every school stating that it had need for all the items listed. Under the direction of Colonel Ash and Dr. Spitz, the Museum prepared and, during the last week of December 1943, sent out to the medical schools 2,312 lantern slides, 1,049 tissue blocks, 324 stained sections of tissue, and 794 sets of clinical records and autopsy protocols. Through these

<sup>18</sup> Ash, J. E.: In Memoriam: Sophie Spitz; An Appreciation; 1910-1956. American Journal of Clinical Pathology 30: 553, December 1958.

materials, it was hoped that the students might receive more thorough instruction in tropical medicine, and that future medical officers of the Armed Forces would have more adequate training in the subject.<sup>19</sup>

So great was the demand for pathological materials, and so valuable was the concentration of such materials at a central point, that the flow of specimens and records from military sources was supplemented by contributions from the civilian medical world. Action to this end was started at a meeting of a sub-committee of the Advisory Committee of the National Research Council, held in the same month as Pearl Harbor, at the suggestion of Col. George R. Callender, and was carried forward by the Council of the International Association of Medical Museums, and the secretaries of the American Association of Pathologists and Bacteriologists and of the American Society of Clinical Pathologists. These organizations approved a plan for the collection of pathological material, including pictorial records of diseases and injuries, that might come to the attention of civilian pathologists so that it might be added to the collections of the armed forces. The civilian materials to which attention was particularly called were those "arising from airplane crashes, civilian bombings, fires, gunshot wounds, and specific epidemics, particularly the virus diseases, encephalitis, polio, Rickettsia, influenza and 'atypical' pneumonia." The Army Medical Museum was approved as the collecting point for all such material, which could there be "processed, correlated and studied with material from army activities and possibly from the other armed services" and be "available for training, teaching and scientific purposes."

Pursuant to this plan, Colonel Ash, in his capacity as secretary of the Association of Medical Museums, on 5 March 1942, issued a circular addressed to civilian doctors, in which he outlined the plan and specified in greater detail the types of materials desired.<sup>20</sup>

This appeal was reinforced by Surgeon General's Office Circular Letter No. 127 (1943), which read:

In view of the need for pathologic material in undergraduate and graduate education, the Committee on Pathology of the National Research Council urges that all who have suitable anatomic specimens forward them to the Curator of the Army Medical Museum \* \* \* for correlation and distribution to other central agencies and to teaching institutions. Material from the following is particularly wanted: the malarial diseases, bacillary dysentery, endamebiasis, filariasis, the trypanosomiases, the relapsing fevers, the

<sup>19</sup> (1) Circular Letter to Professors of Pathology, undated. (2) Letter, Col. J. E. Ash to The Surgeon General, 30 June 1943, with 1st Indorsement, The Surgeon General, to Colonel Ash, 1 July 1943. (3) Report of Army Medical Museum Activities to 31 December 1943. On file in historical records of AFIP.

<sup>20</sup> Correspondence on file in historical records of AFIP.

leishmaniases, the rickettsial diseases, yellow fever, cholera, plague, and yaws. On application to the Curator, arrangements for transportation will be made.

### *Use of Materials for the Study of Pathology*

To take full advantage of the concentration of materials for pathological study at the Museum, the Surgeon General's Office issued, on 23 July 1943, temporary duty orders, for 10-day tours of duty at the Museum, on 34 medical officers, distributed over the nine service commands. The purpose was to give officers in charge of the histopathologic centers and certain other key officers in the various regions an opportunity to observe at firsthand the available facilities and the procedures followed at the Museum and also at the laboratories of the Army Medical School. A large amount of material was being sent in daily, and the majority of the officers sending materials were conscientiously trying to carry out instructions, the letter said, but there were still a "number who through unfamiliarity were failing to comply. Hence, on the one hand, the facilities provided by the Army Medical Museum and the other central laboratories are not fully utilized, and on the other hand, much very valuable material is not submitted and thus is lost to the Army." The hope was expressed that by "thoroughly familiarizing a selected group of officers with the various activities, facilities and problems of the central laboratories in Washington, present misunderstandings may be corrected and future ones avoided." The officers to whom the orders were directed were expected to pass on to other laboratory officers in their respective service commands the information gained in the short tour of duty in Washington.

The first group, 10 officers from the Third and Fourth Service Commands, were to report on 16 August 1943. They were to be followed by 15 officers

The first group, 10 officers from the Third and Fourth Service Commands, reporting on 30 August, and they, in turn, by nine from the Ninth Service Command, reporting on 13 September.<sup>21</sup>

Officers detailed for these temporary duty assignments had the opportunity of attending and participating in the staff conferences held daily at the Medical Museum, at which diagnostic problems were discussed and illustrative material was screened. Each Saturday afternoon, there was a seminar at which an out-

<sup>21</sup> (1) Correspondence, Col. J. E. Ash to Lt. Col. E. S. Robinson, Laboratory Branch, Preventive Medicine Division, Surgeon General's Office, 20 July 1943. (2) Memorandum, Lt. Col. E. S. Robinson to Chief, Military Personnel Division, 23 July 1943, approved by Brig. Gen. James S. Simmons, Director, Preventive Medicine Division, in which Service Commands were requested to issue temporary duty orders for the officers whose attendance was desired.

standing authority in pathology presented a topic, after which there was a free discussion. All medical officers stationed in Washington and vicinity were invited to attend the staff conferences and seminars.<sup>22</sup>

The practice of having medical officers detailed for brief periods of observation and training at the Army's center for pathology continued through the war period. Pressure of duties at their home stations and the worldwide dispersion of the Army, however, combined with the crowded conditions at the Museum itself to limit the number of laboratory officers who could receive such training. Altogether, some 150 officers were detailed to see the organization and operation of the Museum-Institute at firsthand, but other means had to be found to make the results of continuing study and research in pathology more widely available.

### *Study Sets*

This was done, in part, through publication of articles of particular interest in the medical scientific press. For more detailed and intensive study, however, the printed word alone, even with photographic or photomicrographic illustrations, was not enough. For such students of particular topics, the Museum-Institute set up an extensive service, making study sets available to all Army laboratories, to keep medical officers throughout the Army informed about the pathology of the diseases prevalent during the war.

These study sets consisted of slides for microscopic study, reinforced by printed syllabuses or atlases illustrated by photographs or photomicrographs of the diseases with which they dealt. The sets were of two sizes, 100 slides and 25 slides. The larger sets covered the pathology of major specialties such as ophthalmology, otolaryngology, orthopedic surgery, neurology, dermatology, gynecology, serology, and dental and oral surgery—in general, the specialties in which active registries had been established by the time of the entrance of the United States into the Second World War.

The smaller sets dealt, for the most part, with specific diseases, among them being lesions of the lymph nodes and the thyroid gland, tumors of certain organs, interstitial pneumonitis or viral pneumonia, the various types of encephalitis, and the several diseases traceable to different forms of fungus. During 1945, the last year of active hostilities, a total of 1,669 study sets were sent out on loan, approximately 90 percent of which went to Army installations and the remainder to civilian doctors.<sup>23</sup>

<sup>22</sup> Editorial: Seminars at Army Medical Museum. Bulletin of the U.S. Army Medical Department 73: 106, February 1944.

<sup>23</sup> Brochure, AIP-AMM, 1 July 1945, p. 3.

Both types of sets were designed to make available to medical men the information derived from the specimens and clinical records flowing into the Institute from medical installations all over the world. The emphasis, of course, was upon the pathology of the soldier—the military-age group roughly defined as from 18 to 38 years. "Never before," said Colonel Ash, "has there been an opportunity to learn so much about the pathology of this military age group; only now as a result of the Army policy of centralization have significant data been available to cover this presumably healthy span." In contrast with the knowledge of diseases at other times of life—infancy, childhood, middle life, and old age—information about young adults was scarce indeed.

The pathological findings were, in many cases, surprising. For example, while it had long been known that fatal coronary disease is suffered by the young, the number of fatalities from this cause was unexpectedly large. Study of the first 80 cases received at the Institute showed that about one-third of these deaths were in men under 30 years of age, and that overweight was a common condition among those so stricken. Another unexpectedly large figure was that of malignancies in the gastrointestinal tract. In fact, tumors of various types were found to be more prevalent than had theretofore been realized.<sup>24</sup>

Among the disease conditions which were the subject of special studies by the Institute staff and its resident consultants were infections of the central and peripheral nervous systems, and the group of diseases transmissible to man by the bite of an infected louse, flea, tick, or mite, known generically as rickettsial diseases, named for Dr. Howard Taylor Ricketts who lost his life to typhus.

Other special studies by the staff included malaria and the results of its treatment with Atabrine; heat stroke, a subject of particular interest to an Army which was to do much of its fighting in areas of high temperature; failure of the kidneys to function as a result of crushing injuries to other parts of the body, burns, or transfusions of incompatible blood; and tumors of various types and localization. These studies were carried on in conjunction with, or at the same time as, those of other agencies investigating like conditions, and all such studies were greatly furthered by the collection, in one central location, of significant numbers of cases of each type.<sup>25</sup>

As an example of the prompt and expert diagnostic and consultative service offered by the Institute, as an aid in the reduction of health hazards, there was

<sup>24</sup> Ash, *Bulletin of the U.S. Army Medical Department*, 4 (1945), pp. 718-723.

<sup>25</sup> (1) *Idem*. (2) Brochure, AIP-AMM, 1 July 1945, pp. 4, 5. (3) Typescript of Memorandum, "Armed Forces Institute of Pathology: Status in a Future War," dated 8 September 1950. On file in historical records at AFIP.

the case of soldiers serving in Alaska who died unexpectedly and inexplicably, insofar as the local medical officer could determine. Autopsy tissues sent to the Institute indicated that death was due to severe damage to the liver following inhalation of a toxic vapor. Investigation revealed that the soldiers had used a cleaning fluid containing carbon tetrachloride to clean weapons. A directive was issued promptly to discontinue the use of the fluid indoors, and pathologists in the field were alerted to the danger of its use in confined quarters. From such instruction, Army pathologists were enabled to explain the previously undetermined causes of death among crews of allied submarines which docked at Pacific ports. Studies of autopsy tissues revealed characteristic lesions, and investigation showed that the sailors had used toxic cleaning solutions within the close confines of submarines.

Along with the work on specimens received through military channels, went the work done under the direction of the American Registry of Pathology, through which materials of pathological interest arising in civil life were analyzed and studied. On account of wartime pressures, both upon the staff and the cooperating civilian physicians, the followup system had to be suspended for the duration of the war, and there was some slackening in the registration of tissues and clinical records contributed from this source. Interest in the registries continued, however. Five new registries were added during the war, bringing the total number to 13. The total number of accessions received by the Museum-Institute from this source by the end of the war had grown to more than 48,000.<sup>26</sup>

### *The Army Medical Illustration Service*

While the study of pathology was the principal business of the Museum-Institute, it still was but part. Closely related was the graphic representation of the results of such study through the media of drawings and paintings, photography and photomicrography, and plastic medical art—all comprising the Army Medical Illustration Service (fig. 8o).

This Service included the Photographic Laboratory which, in an average month, turned out from its collection of 100,000 negatives of medical interest as many as 2,500 prints, prepared 1,000 colored lantern slides, and made more than 2,500 photostats and 25,000 offset prints. Not all of this work, by any

<sup>26</sup> (1) Draft of Report of Inspection, Army Medical Museum (Army Institute of Pathology), with covering letter, Col. J. E. Ash to Assistant Commandant, Army Medical Center, 3 January 1945. Photostat copy in AFIP files. (2) Karsner, H. T.: The American Registry of Pathology and its Relation to the Army Institute of Pathology. *The Military Surgeon* 99: 369, November 1946. (3) American Urological Association Address.

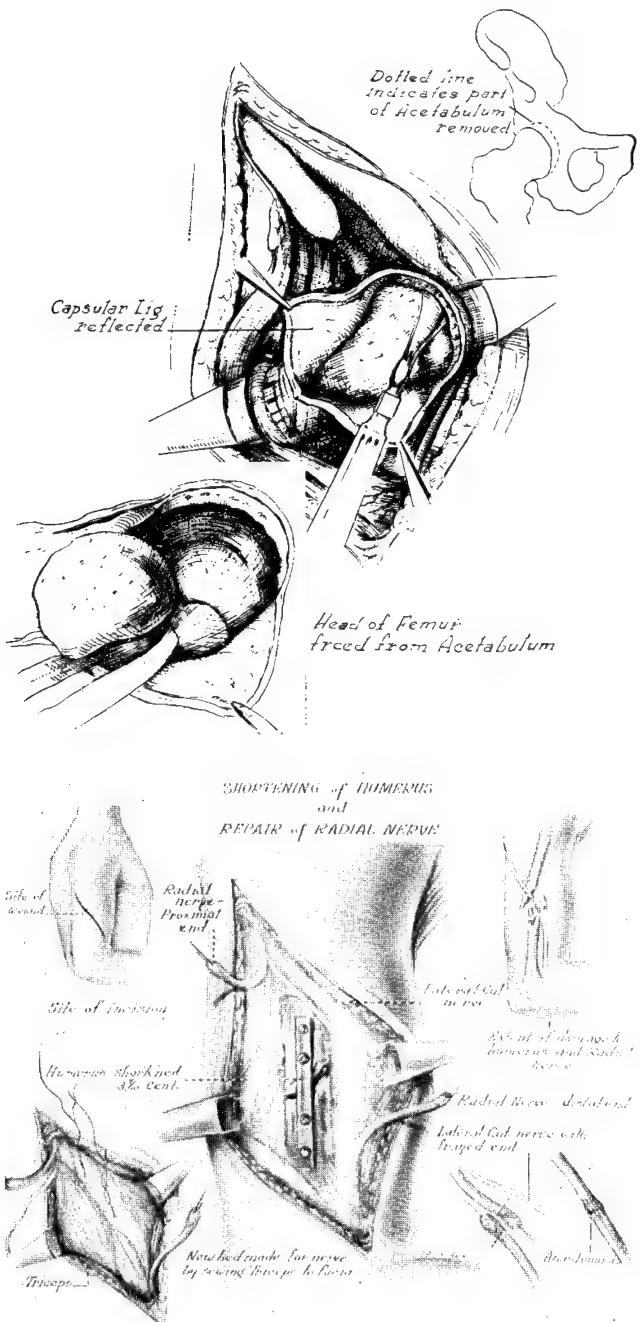


FIGURE 80.—Pencil, pen, brush and camera: The medical illustrator uses many media in his task of presenting the picture of trauma and disease.

means, was done for the Museum-Institute, as the Laboratory, presided over by Roy M. Reeve, became, in effect, the photographers for the Surgeon General's Office.

The work of medical illustration in the oversea theaters was provided for by the detachments sent out by the other branch of the Medical Illustration Service—the MAMA's—but until as late in the war as mid-1943, no plan for central supervision of clinical photography in the hospitals in the Zone of the Interior, or the "homefront," had been adopted. On 15 June of that year, Colonel Ash proposed to The Surgeon General a plan for such supervision, with centralization of the resulting materials in the Museum, where they would be available for teaching, scientific, and historical purposes.

Upon inquiry, it appeared that only 6 out of the 22 general hospitals queried had photographic equipment and supplies. In November, therefore, The Surgeon General approved in its essentials the plan for centralized direction of photographic activities in the Museum. This action was followed by a circular letter of 22 December, directing that, beginning with 1 January 1944, monthly reports be made to the Museum, with prints of all photographs. When prints were found to be worthy of preservation or wider circulation, the Museum was to request the negatives for copying, after which the negatives were to be returned to the hospital. Under this plan, the Institute was to handle in an average month 5,000 still prints from 60 hospitals in the United States.<sup>27</sup>

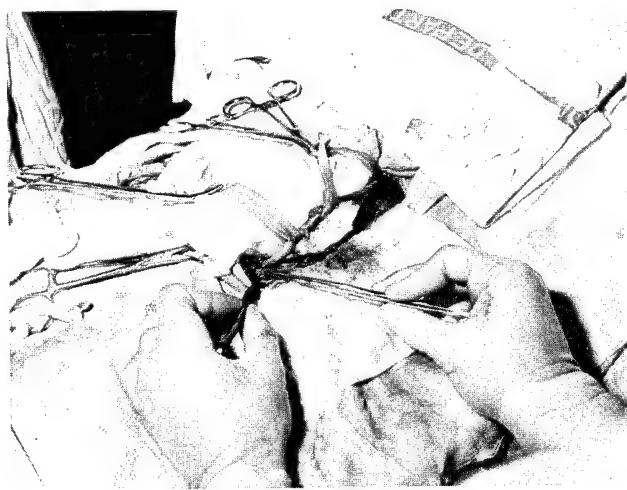


FIGURE 80.—Continued.

<sup>27</sup> Correspondence on file in historical records of AFIP.

To help meet the demand for medical artists and clinical photographers both at home and abroad, The Adjutant General of the Army, in a telegram of 2 August 1943, directed the commanding general of the Medical Replacement Center at Camp Grant, Ill., to submit to the Curator of the Museum the name, serial number, and experience record of clinical photographers reporting to the Center, and not to transfer such personnel elsewhere except upon instructions from The Adjutant General's Office.

As part of the education of Medical Department personnel, the Director of Training, Army Service Forces, Maj. Gen. Clarence R. Huebner, asked the Training Division of the Surgeon General's Office to prepare a graphic portfolio illustrative of first aid in battle. The project was turned over to the Museum in February 1943, and Captain Netter was assigned the job of producing 50,000 portfolios of 50 posters each. Sketches and a preliminary draft of the text were approved by The Surgeon General and the Training Division, Army Service Forces, by the end of March. Final photographs and paintings were completed in July. After a period of study and review by various officers of the Surgeon General's Office, the Training Division of the Army Service Forces, and the Publications Division of The Adjutant General's Office, the material was finally approved and turned over to the U.S. Government Printing Office for publication. In October, the Government Printing Office, for more rapid production, let the job on contract to five lithographic companies in New York. To save time, Captain Netter was ordered to New York to supervise the lithographing. On 6 November, the plant having the largest portion of the production ran out of paper—six carloads were required to do the whole job—and it was not until 9 December, more than 9 months after the project was started, that the lithographs were completed and ready for distribution. Such were the problems of production in wartime.<sup>28</sup>

As an aid to more realistic teaching of emergency medical care and battlefield first aid, the Museum and the Medical Arts Section were called upon to produce sets of war-wound moulages, or models in synthetic rubber, of the types of wounds which might be expected. Each set consisted of eight pieces—two masks showing shell-fragment wounds of the forehead and gunshot wounds in the jaw, to be worn by the men representing the "wounded," and six plaques to be attached to the "wounded" men, showing wounds in the chest, the abdomen, the arm and hand, and the leg. The purpose was to "impart greater realism to casualties" in practice maneuvers, and to give better opportunity to demonstrate correct methods of wound treatment, as set forth in War Department Technical

<sup>28</sup> (1) Report of Army Medical Museum Activities to 31 December 1943. (2) Letters, Captain Netter to Colonel Ash, 12 November and 9 December 1943. Photostats on file in historical records of AFIP.

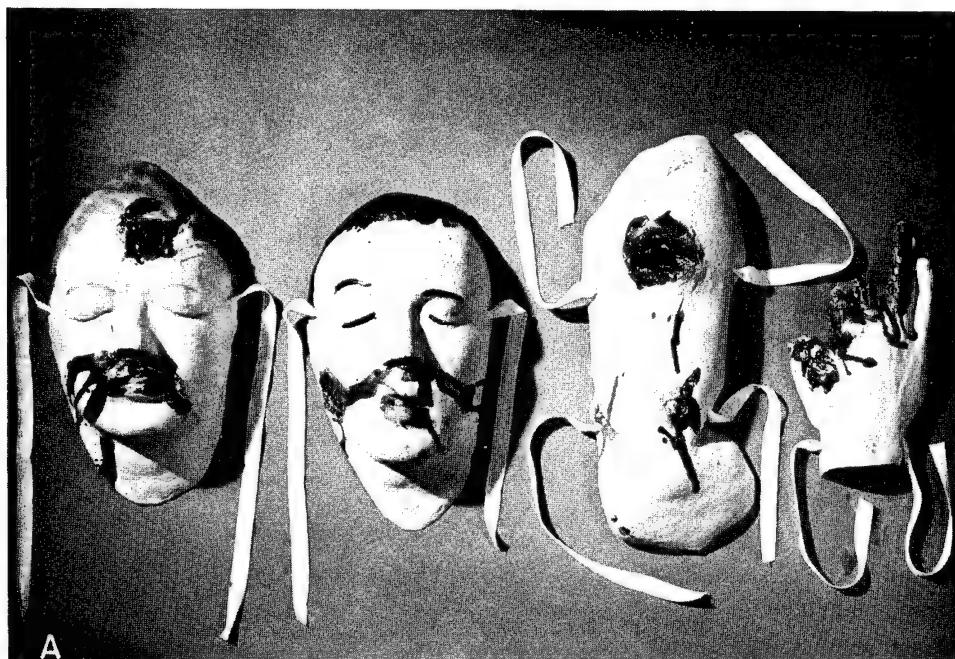


FIGURE 81.—“Wounds” for training purposes. A. Moulages, produced by the Medical Illustration Service, represent types of wounds which might be expected.

Bulletin 116, issued on 18 November 1944. When applied to soldiers in the field, the moulages were startlingly lifelike (fig. 81).

More than 4,000 pieces, representing 11 different wounds, were prepared by the Medical Illustration Service, but none of the World War II moulages are to be found in the Museum today. In late 1944, after the moulage-making job was completed, the laboratory was cleaned up and turned to other uses, but apparently no attempt was made to accession a set or two or to salvage the original patterns or the plaster of paris molds. Instead, it is likely that all the excess moulage materials were included in a general cleanup of the Museum, in which nine truckloads of materials of various sorts were hauled off to nearby Army posts in Virginia and dumped. Diligent search of the basement of the Institute building and of Chase Hall—a temporary building into which the Museum proper was moved in April 1947—failed to turn up any of the missing moulages of this particular lot. The use of moulages in training was continued, however, and they are still being made by the Medical Illustration Service.<sup>29</sup>

<sup>29</sup> (1) Typewritten memorandum in AFIP files dated 1 March 1949, signed R.A.S. (the initials of Maj. Ruell A. Sloan, Curator, Army Medical Museum, in 1949). (2) The production of these moulages at the Army Medical Museum is described in: Clarke, Carl D.: Rubber Moulages for First Aid Training. *Journal of Technical Methods* 25: 91-101, December 1945.



FIGURE 81.—Continued. B. When applied to soldiers in the field, moulages were startlingly lifelike.

### *Storage of Museum Collections*

Even before the outbreak of the war, it had been necessary to store a major part of the collections of the Museum proper. With the onset of the war and the proliferation of new activities, still more material had to be withdrawn from exhibit, and storage space had to be found in a southwest Washington waterfront warehouse. Except for the main exhibit hall, all the exhibit rooms in the old building were given over to offices and laboratories. The number of rooms was increased by partitioning the large old-fashioned rooms into smaller cubicles.

With it all, however, the Museum proper was kept open, and continued to draw visitors at the rate of 200,000 a year. Capt. Hans Schlumberger added to

his duties as a professional pathologist the task of making the most that could be made of the limited exhibit space remaining, and was successful to a remarkable degree. In this, he was assisted by the installation of new alternating-current lighting to dispel the "1885 gloom" of the decrepit direct-current lighting system in the old building. Testimony to the effectiveness of the captain's efforts is to be found in a staff letter at Christmas time, 1944, in which readers were told, "You'd never know the crusty old place." More formal evidence to the same effect is found in the draft of an inspection report, made in January 1945, which noted that "the museum display has been reset so that it is now more informative and instructive to the general public; it is still, however, of great interest to medical students and to physicians."

The same 1945 inspection report pointed out that the present accession rate in the Institute-Museum was on the order of 20,000 per year, but that "because of the screening function of the histopathologic centers which eliminate such routine materials as tonsils and appendices, almost all of these 20,000 cases present diagnostic problems." In consequence, the case load had grown faster than the staff to handle it. Nevertheless, in spite of the fact that "the load \* \* \* now exceeds the capacity of the present personnel" and the inadequacy of a building which was "tremendously overcrowded," the "tissues received for diagnosis or review" were "handled promptly," and reports were sent out by mail, air mail, telegraph or radio, "in accordance with the emergency of the situation." The service of the Army Institute of Pathology, the report said, "has acted as a check on the correctness of diagnosis in all branches of the medical service."<sup>30</sup>

### *Veterans' Administration and the Museum*

The end of hostilities in 1945 brought an uneasy peace to the world, but it saw no great slackening of the work of the Army Institute of Pathology. As the wartime hospitals were inactivated, and their laboratory material was forwarded to the Institute for screening and review, there was a spurt in cases handled. Before this was past, arrangements had been made to have the Army Institute act as the central laboratory of pathology for the Veterans' Administration in much the same way as it did for the Army.

<sup>30</sup>(1) Christmas Message, Army Medical Museum, 1944, preserved by Mr. H. C. Kluge, Medical Illustration Service. (2) Report of inspection, 3 January 1945. Photostat on file in historical records of AFIP.

In a letter to The Surgeon General of the Army, written on 24 September 1945—less than 2 months after the surrender of the Japanese—Colonel Ash suggested such an arrangement as being beneficial to both parties, and to the Government as well. "We are now receiving daily requests from the Veterans' Administration for slides and diagnoses on cases that have been transferred to its facilities," Colonel Ash wrote, as evidence of the possibilities for a continuing "followup" of patients from their days in active service through their periods of treatment in the facilities of the Veterans' Administration. "There are now 97 Veterans' Facilities \* \* \*" he wrote, and "no doubt this number will be greatly augmented shortly." The additional load, he added, could be handled by having the Veterans' Administration assign to the Institute two pathologists, two technicians, and two clerks.

After consultations and correspondence between the Administration and the Institute, Gen. Omar N. Bradley, Administrator of Veterans' Affairs, wrote the Secretary of War, on 12 June 1946, that the veterans' organization was "in need of certain forms of immediate assistance which it is believed could be provided by the Army Institute of Pathology." These were consultation and review as to pathological materials, assistance in training specialists in pathology and in studies of disease processes. General Bradley advised that informal conversations with The Surgeon General of the Army, Maj. Gen. Norman T. Kirk, and the Director of the Institute, indicated that the Institute was willing and capable of providing the assistance needed, if the Veterans' Administration would furnish personnel to cover the added workload. "This," General Bradley said, "we will be able to do." Use of the Institute's facilities, he added, would avoid needless duplication of facilities, while the Institute would "benefit through the accession of a great deal of additional material, much of which would be correlated with previous specimens received while patients were in military service."

On 8 July 1946, Secretary of War Robert P. Patterson approved a plan so obviously desirable and in the best interest of both organizations, and of the patients whom both served.<sup>31</sup>

Only a month before the consummation of the plan to have the Institute perform the central pathological service for the veterans' organization, Colonel Ash saw another of his projects come to pass when, on 7 June 1946, a new War Department Army Regulation was issued, amending AR 40-410 so as to make the "Army Institute of Pathology" the official designation of the whole operation, with four departments—the Department of Pathology, the Army

<sup>31</sup> Copies of the correspondence on file in historical records of AFIP.

Medical Illustration Service, the American Registry of Pathology, and the Army Medical Museum. The head of the organization was to bear the title of "Director"; the heads of the pathology department and the registry were to be "Scientific Directors"; the head of the illustration service bore the title of "Chief"; and the head of the Museum section, the title of "Curator." A Scientific Advisory Board of Consultants was provided for, with not more than 25 members, serving 5-year terms, to be appointed by The Surgeon General upon recommendation of the Director.

### *Words of Appreciation*

The year 1946, the last of the 10-year tour of Colonel Ash, saw an unusual tribute to the retiring director in the publication of an entire issue of *The Military Surgeon* devoted to Colonel Ash and the Army Institute of Pathology. The issue opens with a Foreword from Surgeon General Kirk, in which he wrote that Colonel Ash's "diligence, foresight, professional knowledge, and undeterred devotion to duty have led to the organization of the most extensive service in tissue pathology ever known in the world."

General Kirk's Foreword is followed by an Appreciation by Col. James M. Phalen, long associated with the Library; by a sketch of the Institute during World War II by Col. Balduin Lucké; by an account of the American Registry of Pathology and its relation to the Army Institute of Pathology, by Dr. Howard T. Karsner; by a paper on the dental and oral pathology registry, by Dr. Henry A. Swanson and Lt. Col. Joseph L. Bernier; and by 10 scientific papers prepared by 16 scientists connected with the Institute and published as a tribute to the retiring director.

After summing up the advantages favoring an institute located in the National Capital as a site for the registries of national scope, Dr. Karsner summed up the situation of the organization in 1946 in his Military Surgeon article. "This Institute," he said "is unique in the world. Nowhere else has there ever been a concentration of pathological specimens that is comparable. Nowhere else is the pathology of the entire Army of a great country so concentrated. Nowhere else have the civilian pathologists and other interested physicians taken such a great part in organization and operation. Nowhere else has there been, as continues to be true, such a close scientific liaison between medical officer and civilian doctor."<sup>32</sup>

From a civilian source, the *Journal of the American Medical Association*, comes confirmatory comment on the place of pathology in the accomplishments

<sup>32</sup> Karsner, *The Military Surgeon*, 99 (1946), p. 369.

of medicine in wartime. "The startling accomplishments of surgery, medicine, physiology, bacteriology and epidemiology as they partake in the war effort tends to obscure the significant part played by pathologic anatomy," said the Journal. "In man, and in animals with natural or experimentally induced disorders, the final identification of disease, indispensable in investigation, depends on pathologic anatomy. Through the medium of autopsies and surgical specimens, pathologic anatomy serves the Army in its usual unpretentious manner. The organization now operating in the Army is such that careful examinations can be made in the field; central facilities provide for skilled controls and permanent files. Surgeons are aided in their operative work, internists in their investigation of patients and all medical officers in diagnosis, treatment and prevention not only of internal diseases, but of injuries on land, on sea and in the air."<sup>33</sup>

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<sup>33</sup> Karsner, *Journal of the American Medical Association*, 124 (1944), pp. 710-711.

## CHAPTER XIV

# The Immediate, Imperative Objective

Within a month after the guns of the Second World War were stilled, Surgeon General Norman T. Kirk asked the National Research Council to study the situation and prospects of the Army Institute of Pathology and recommend the most advantageous use of its facilities, "both for the Army Medical Department and for the medical profession as a whole."

Dr. Lewis H. Weed, chairman of the Division of Medical Sciences of the National Research Council, to whom the request was addressed, turned the assignment over to the Committee on Pathology of his division, of which committee Dr. Howard T. Karsner of Cleveland was chairman and nine other distinguished pathologists were members.<sup>1</sup>

On 1 December 1945—less than 3 months after receiving the assignment—the Committee filed its report with The Surgeon General of the Army. Approximately half of its 37 specific recommendations were to the effect that the Institute continue what it was doing, while the remainder represented new activities, or modification and strengthening of those already undertaken. These recommendations were divided equally between those having to do with increases in staff and with innovations in methods, such as, for example, the use of machine-accounting procedures in coding and filing.

"Today," said the report, "the Army Institute of Pathology is truly the central laboratory of pathology and medical illustration for the entire United States Army. The extraordinary amount and variety of material at the disposal of the Institute is unmatched elsewhere in the world. This material offers unlimited opportunities for the study of structural tissue changes and correlation with clinical observations. With proper development of facilities and personnel, the Army Institute of Pathology can become a guiding force in the furtherance of pathology in this country and the world."

<sup>1</sup> Members of the Committee, in addition to Chairman Karsner, were: Doctors Marion A. Blankenhorn, University of Cincinnati; Paul R. Cannon, University of Chicago; William H. Feldman, Mayo Foundation, Rochester, Minn.; Robert A. Moore, Washington University, St. Louis, Mo.; Alwin M. Pappenheimer, Columbia University, New York; I. S. Ravdin, University of Pennsylvania; Arnold R. Rich, Johns Hopkins University, Baltimore, Md.; Henry A. Swanson, Washington, D.C.; and S. Burt Wolbach, Harvard University.

Accordingly, the "first and most important recommendation" of the Committee was that the name of the Museum be changed to the Institute of Pathology—a change already in effect unofficially which, 6 months later, was to be made official by appropriate Army regulation. The second recommendation, that the Institute should become the central laboratory of pathology for the Veterans' Administration, was likewise already underway and was to be consummated in a matter of months.

### *Continued Efforts To Get a New Building*

A third recommendation for a new departure concerned itself with the need of a new building. The building in which somehow the work of the war years had been done, the Committee said, "was built in 1887, fifty-eight years ago, and is no longer adequate \* \* \*. It is antiquated, overcrowded, obviously cannot be modernized, and there is no provision for experimental research." The Committee recommended, therefore, that "the Surgeon General proceed at once to secure authorization and funds for the construction of a building adequate in size and arrangement for the expanding activities of a modern army institute of pathology."

In this recommendation also, the Committee was putting its weight behind an activity that was already underway—the effort to obtain a new building for the Library and the Museum. This effort, which had been shelved in December 1941, in the face of the oncoming storm of war, had been revived in the planning stage before the war ended. On 14 December 1944, Col. James E. Ash advised The Surgeon General of the Army that it had just come to his attention that "entirely new plans for the building had been prepared," dated September 1944, but that no opportunity had been afforded the Museum to "express our ideas on plans for the Army Medical Museum portion of the building," and that the new plans had "omitted two of the floors that had originally been assigned to the Museum."

"We fully recognize the great importance of the Army Medical Library," he said, "but we do not hesitate to state that the Army Medical Museum, as it has developed over the past twenty years, has reached a point of equal importance, not only to the Medical Department of the Army but to the medical profession in general \* \* \*. The enormous expansion of the pathologic and illustrative functions has justified our new designation as the Army Institute of Pathology as more exactly representing our real purpose \* \* \*. The Institute is acknowledged as the largest center of pathological and medical illustra-

tive material in the world. Its place in the professional life of the country is limited only by the personnel and facilities allowed it \* \* \*. We cannot feel, therefore, that we are so near the tail of the dog that we cannot have equal opportunity with the Library to plan for our new building, so long as the two institutions are to be housed together."

Colonel Ash's letter to The Surgeon General closed with the recommendation that "a small committee of medical officers, who have the interests of both institutions at heart, be appointed to assist in the development of final plans and policies \* \* \*."<sup>2</sup>

Apparently this letter bore fruit, for on 24 January 1945, The Surgeon General set up a board to review all matters relating to planning and construction of a new Army Medical Library and Museum. Detailed for the board were Maj. Gen. George F. Lull, the Deputy Surgeon General, as chairman, Col. A. G. Love, and ex-officio the Directors of the Library and the Museum, and the Chief of the Hospital Construction Branch of the Surgeon General's Office.<sup>3</sup>

### *Changes in Role of the Museum*

"The objectives and responsibilities of the Army Medical Museum have changed radically in recent years," Colonel Ash informed The Surgeon General, "and several new divisions have been added. Hence the space planned for this institution in the projected new building is no longer considered adequate and must be increased from fifty to seventy per cent." In the Division of Pathology, the principal division of the institution, the material examined in the 3 years since Pearl Harbor had already amounted to "three-fourths as much as had been received by the Museum during its entire previous existence, which included three wars." The use of this material—over 50,000 cases a year derived from either important surgical operations or autopsies—in research and educational activities would require increased staff and more space. So it was, also, with the registries, which gave to medical officers of professional promise and qualified civilian physicians and specialists unexcelled opportunity for training and research. More space was required, also, for the Army Illustration Service through which the Museum was receiving "vast quantities of significant illustrative material." The Public Museum, while it was "by far the largest museum of its kind," was described as "antiquated," with its exhibits

<sup>2</sup> Letter, Col. J. E. Ash to The Surgeon General, 14 December 1944. On file in historical records of AFIP.

<sup>3</sup> Office Order 20, Surgeon General's Office, 24 January 1945.

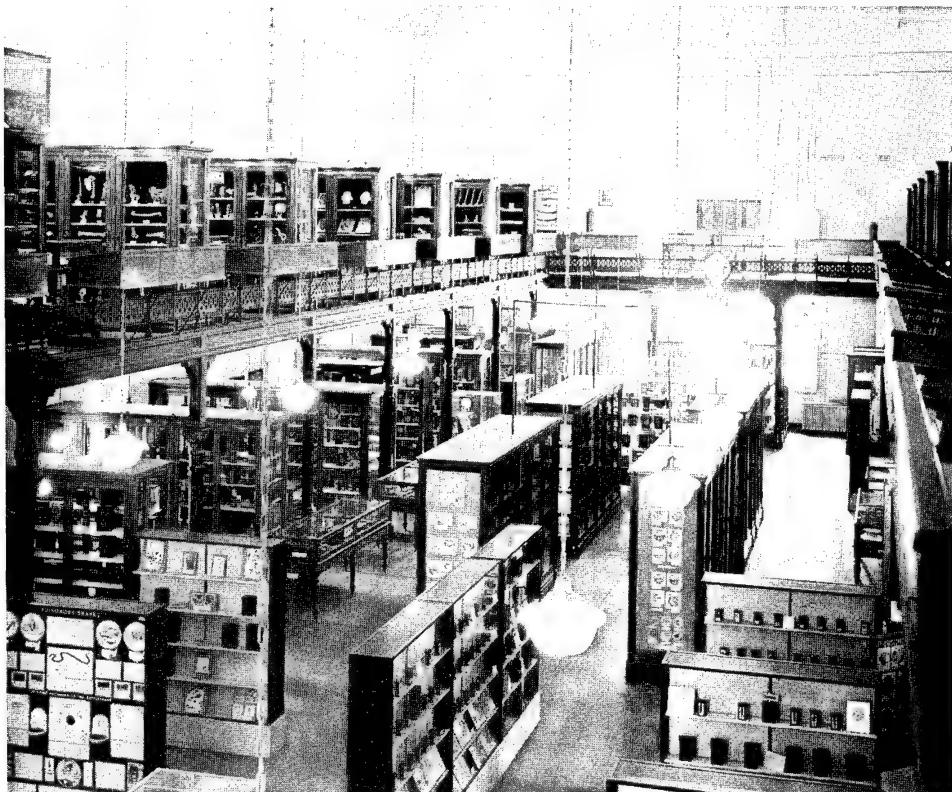


FIGURE 82.—Main exhibit hall of the Medical Museum in the 1930's. These crowded conditions continued and even worsened, until the Museum vacated its quarters in the old building, making more space available for other activities of the Institute.

"poorly displayed" due to "lack of space and wholly inadequate housing facilities"<sup>4</sup> (fig. 82).

The postwar relationships and associations among the several Army organizations devoted to particular features of military medical activities, and the prospective functions and development of each of them, became the subjects of active consideration, both by correspondence and conference, throughout 1945, before as well as after the cessation of hostilities.

### *Problems of Location*

Much thought was given to the advantages and disadvantages of the several arrangements which might be made. Should the Library and the Museum

<sup>4</sup> Correspondence, Col. J. E. Ash to The Surgeon General, 7 February 1945. On file in historical records of AFIP.

share a new building, as they had shared the old for almost 60 years? If so, where should the new joint home be located—on the site southeast of the Capitol which had been approved in 1941, or at the Army Medical Center which had grown up around the Walter Reed Hospital?

Or, should the long association of the Library and the Museum as joint occupants of the same building be terminated by providing separate buildings, either on adjacent blocks of land on Capitol Hill or with the Library location in that area and the Institute and Museum in the Walter Reed group? Or, perhaps, the Institute and Museum should become part of an Army Medical Research and Graduate Teaching Center proposed to be located at Forest Glen, Md., where the buildings of the National Park Seminary for Women were occupied as an annex to Walter Reed General Hospital, for convalescents.

On one point, there was virtually complete agreement: that the building originally planned in 1941 would be entirely too small for the needs of the Museum and the Library, because of the "tremendous expansion of both institutions and the establishment of the Army Institute of Pathology," as The Surgeon General put it, in recommending to the Commanding General, Army Service Forces, a change in the basic plans for the proposed building. As necessary steps in orderly planning, it was requested that The Surgeon General be authorized to endeavor to secure approval of the National Capital Park and Planning Commission for an additional block of land in the proposed site on Capitol Hill.<sup>5</sup>

Permission was granted to start revised plans for the proposed building, and the architects, Eggers and Higgins of New York, came to Washington to meet with representatives of the interested Government agencies. The whole group adjourned to meet with Maj. Gen. U. S. Grant III, chairman of the Park and Planning Commission, who assured them that the Commission would "earmark" in its plan a plot of land on Capitol Hill, adequate for the purpose.

On the same day, 20 April 1945, at a meeting called by General Kirk, The Surgeon General, to discuss the status of the new building, the proposal to concentrate the educational activities of the Army Medical Department was introduced, and Colonel Ash urged that the matter should be referred to the Army Medical Research Board for its consideration before proceeding further with plans which would commit the Department to the erection of a building, or buildings, separated from its central educational activities.

<sup>5</sup> Correspondence, The Surgeon General, to Commanding General, Army Service Forces, 19 February 1945. On file in historical records of AFIP.

During the daylong series of meetings, three plans were considered—separate buildings for the Library and the Institute-Museum, to be located on adjacent blocks of land on Capitol Hill; or, in the alternative, to place the Library near the Capitol, and to transfer the Institute-Museum to a site close to the other educational and research organizations of the Army Medical Department, either on or immediately adjacent to the Walter Reed reservation or at the Forest Glen site, where it was contemplated that a great new medical research and training facility would be set up.<sup>6</sup>

At a meeting, held on 5 May 1945, of the special board created to deal with the relocation of the Institute-Museum, and after consideration of the real estate appraisals of the several sites under consideration, General Kirk decided that the Library should be located on a square block southeast of the Capitol, and that the Institute should be located on a site immediately south of the Walter Reed reservation.<sup>7</sup>

The reasons for this decision were stated in a letter from General Kirk to the Chief of Engineers, through Brig. Gen. J. S. Bragdon, Director of Military Construction. "The Army Medical Library," said The Surgeon General, "will continue to serve not only the Army but the medical profession of the world. Its usefulness is in some part dependent upon its accessibility to the public and to other major library collections. The building to house the facility should, therefore, be located on the site \* \* \* adjacent to the Library of Congress which has previously been discussed \* \* \*."

"The Army Institute of Pathology and the Army Medical Museum will continue to serve both the Army and the civilian medical profession. Their service to the Army will be closely related to the functions of the Army Medical Center. Their service to the civilian profession will be handled to some degree directly but in larger degree by mail. Their proper function requires immediate access to hospital beds. It is, therefore, desired that the institute of pathology and the museum be separated physically from the library and studied in relation to the Army Medical Center."

The Surgeon General felt, however, that "additional major investment in the Army Medical Center," such as would be involved in the proposed new building, "should be carefully considered in relation to future requirements." Study was requested "looking to the development \* \* \* on an unrestricted site" of a new Army Medical Center, of which a new 1,000-bed hospital and the new Institute-Museum building would "form a present nucleus." The site for the

<sup>6</sup>Office Memorandums, 19, 20, 21 April 1945. On file in historical records of AFIP.

<sup>7</sup>Memorandum, Office of Chief of Engineers, 5 May 1945, Lt. Col. L. C. Urquhart.

proposed center should be on the northern outskirts of Washington, where ready communication with the new medical centers of the U.S. Public Health Service and of the Navy would be available. Forest Glen was suggested as an "excellent site for this project."<sup>8</sup>

In connection with the studies for the future location of the Institute and Museum, Colonel Ash suggested still another alternative—the physical separation of the historical portions of the Museum's collections, which would be turned over to the Library to be housed in its new building near the Capitol, and the more strictly medical functions of the Museum, which should go with the Institute of Pathology, to be located at either Walter Reed or Forest Glen.

The Army Medical Museum, Colonel Ash wrote in a letter to The Surgeon General, "is a responsibility that cannot be lightly overlooked in spite of the facetious onus that has been attached to it through the years, 'the pickle factory.' It constitutes a part of the cultural background of medicine at least equal to that of the incunabula and rare books of the Army Medical Library. It contains the largest collection of historic microscopes in the world, and the collections of medical coins, models and stamps, ophthalmoscopes, stethoscopes, and so on, are equal, if not more comprehensive, than any others. This material should have its place in the so-called cultural development in which the Library is to share and not be transferred to a comparatively inaccessible place \* \* \*. At present there are about two hundred thousand visitors a year to the Museum, and while it is true that many of these come out of curiosity, the possibilities to the medical department of acquainting such a large group of civilians of all walks of life with its activities cannot be taken lightly."

Just as he felt that much of the Museum was more closely related to the new Library, Colonel Ash felt that the Institute of Pathology was more "logically concerned with the teaching and research programs of the medical department than it is with the activities of a hospital." After all, the colonel pointed out, "the Institute at present serves the Twentieth General Hospital in Assam, India, in the same way that it serves Walter Reed Hospital in Washington," since the Institute "should not have to be concerned with 'run of the mill' pathology." The pathology of a 1,000-bed hospital, he said, would add little to the teaching or research resources of the Institute, which had "the material from all the army hospitals and the large amount from the civilian specialists with which to work \* \* \*."<sup>9</sup>

So matters simmered for 6 months, while consideration was being given to the place of the new building in the scheme of things in a postwar world. In

<sup>8</sup> Letter, The Surgeon General, U.S. Army, to Chief of Engineers, 12 May 1945.

<sup>9</sup> Letter, Col. J. E. Ash to The Surgeon General, U.S. Army, 22 May 1945.

that time, a series of meetings relating to the future of Medical Department research was held by the Army Medical Research and Development Board. One such meeting, held on 20 December 1948, was "occasioned by the knowledge that plans for the Army Institute of Pathology, which is and will remain an important element in the medical research program, had progressed to the point that it had become essential to establish a general plan into which the Army Institute of Pathology may fit logically and effectively." Col. Roger G. Prentiss, chairman of the Board, reported to The Surgeon General that it was unanimously agreed that there should be an Army Medical Research and Graduate Teaching Center, one of the major elements of which was to be the Army Institute of Pathology, and that it should be located at Forest Glen.<sup>10</sup>

The basic plan of the Board was approved by Surgeon General Kirk, but to his approval there were added "reservations and understandings" that "plans for the Army Institute of Pathology must go forward without delay and no effort at implementation of plans for a Research and Graduate Teaching Center shall be permitted to interfere with the more immediate and imperative objective of a new Institute."

"Establishment of the Army Institute of Pathology at Forest Glen," he added, "is contingent on authorization for the simultaneous construction of a new hospital at that site. In the event of failure to obtain such authorization the Institute will be constructed in the general vicinity of the present Army Medical Center."<sup>11</sup>

As things turned out, failure to secure authorization for the new hospital was to cause the abandonment of the Forest Glen project, but for nearly 3 years the proposed research and graduate training program, to be located at Forest Glen, was very much to the fore in the plans of the Army Medical Department.

Speaking at a Washington preview of an exhibit prepared by the Army Medical Illustration Service for showing at the convention of the American Medical Association in San Francisco, Surgeon General Kirk made public announcement of the project on 3 June 1946 (figs. 83, 84). The 12-year program of construction at an estimated cost of \$40,000,000 which was envisaged had yet to secure War Department and congressional approval.<sup>12</sup>

In December 1946, while plans for the relocation of the Institute of Pathology and the Museum were still hanging fire, Colonel Ash reached the age of

<sup>10</sup> Memorandum, Col. Roger G. Prentiss to The Surgeon General, U.S. Army, through Deputy Surgeon General George F. Lull, 21 December 1945.

<sup>11</sup> Sixth indorsement, dated 6 January 1946, to Memorandum of 21 December 1945, cited in footnote 10.

<sup>12</sup> New York *Times*, 4 June 1946.



FIGURE 83.—Maj. Gen. Norman T. Kirk, The Surgeon General, U.S. Army, outlining, to a press conference, plans for a new medical center.

retirement as Director of the Institute, but continued in a civilian capacity for the National Research Council as the Scientific Director of the American Registry of Pathology.

The new Director of the Institute was Col. (soon to be Brigadier General) Raymond Osborne Dart, who in addition to having served as Curator of the Museum in the mid-1930's, had been Assistant Director of the Institute-Museum during the last months of Colonel Ash's administration.

In addition to a new Director of the Institute, there was a new Surgeon General, when Maj. Gen. Raymond Whitcomb Bliss was appointed in mid-1947 to succeed General Kirk who had reached the statutory age for retirement.

### *Building Plans Reviewed*

The new Surgeon General shared the interest of his predecessor in the development of the Forest Glen medical center. In a statement for the press, re-



FIGURE 84.—Colonels James E. Ash and Raymond O. Dart look over the message of an exhibit prepared for showing at the American Medical Association Meeting in 1946, as Maj. Ruell A. Sloan, Curator of the Army Medical Museum (left), looks on.

leased on 22 June 1947, he outlined the plan to make Forest Glen "the greatest medical center in the world." It was contemplated that the group of picturesque buildings in a sylvan setting, which had been the home of a school for young ladies, would be used until buildings better adapted to the work of research and graduate training could be secured. The first of these new buildings were to be the ones used for the Institute of Pathology and its associated Museum, and the new hospital which was to be a key facility in the project.<sup>13</sup>

A year after General Bliss's announcement, and 18 months after that by General Kirk, the congressional approval necessary for getting started was secured when, on 12 June 1948, President Harry S. Truman signed the measure which became Public Law 626, 80th Congress, 2d session, and which authorized the spending of \$600,000 for "complete plans and specifications of an Army

<sup>13</sup> New York Times, Washington Post, Baltimore Sun, 22 June 1947.

Institute of Pathology building, including all necessary auxiliary facilities," to be located at Forest Glen, Md.

The Chief of Engineers, whose office was responsible for the planning and erection of the building for the Institute, assigned the work to the District Engineer Commissioner who, on 13 October 1948, contracted with the firm of Faulkner, Kingsbury, and Stenhouse, Washington architects and engineers, to draw preliminary plans, relying upon the availability of funds under the provisions of Public Law 626.

By this time, the Forest Glen site had been abandoned, due to a ruling by the Bureau of the Budget and other Federal agencies concerned that no additional hospital beds for the Army should be constructed in the Washington area. Since the Institute could not conduct its program of research and teaching without access to the clinical facilities of a hospital, the Director of the Institute and its Scientific Advisory Board had, in December 1947, recommended to The Surgeon General that the new Institute be set up as a "self-contained unit" on the grounds of an existing hospital in the Washington area.<sup>14</sup> The logic of the situation pointed directly to the Walter Reed General Hospital as the hospital; to the area of the existing Army Medical Center as the site; and to the \$600,000 authorized by Public Law 626 as the fund for planning the new building.

But such a simple solution ran against the specificity with which Forest Glen had been designated as the site upon which the building was to be erected. Public Law 626, the Comptroller General ruled, on 19 November 1948, provided funds for drawing plans and specifications for a building at Forest Glen, Md., and nowhere else.<sup>15</sup>

Extensive and detailed studies were made of the functions and needs of the various segments of the Institute's operations; visits were made to a score of the most modern laboratory and technical installations, military and civilian; and, in the light of all these studies, preliminary plans—all that could be done within the existing limitations upon availability of funds—were carried forward. These plans were submitted by the firm of architects-engineers to the responsible representatives of the Chief of Engineers and The Surgeon General and by 1 June 1949 had received approval.<sup>16</sup>

In the existing state of the statutes and the rulings of fiscal authority, this was as far as the project could be carried at the time, but studies by the Institute

<sup>14</sup> Annual Report, Army Institute of Pathology, 1948, pp. 11, 12.

<sup>15</sup> Annual Report, Army Institute of Pathology, 1949, pp. 24, 25.

<sup>16</sup> *Idem.*

staff and its Scientific Advisory Board continued in anticipation of legislative relief.

Meanwhile, and in fact all through the period of agitation and disappointment in the attempt to secure a new building, energetic efforts were underway to make conditions more tolerable in the "old, unsightly, and overcrowded" building which still housed the Institute and the Museum, along with the Library. Once more, there was a general shuffling and rearrangement of offices, laboratories, file and record rooms, and other spaces, so as to bring related activities closer together in the four stories and basement of the building without an elevator.

In part, this rearrangement was made possible by the fact that in August 1946 the Institute had secured from the Public Buildings Administration the use of Chase Hall (fig. 85), across Independence Avenue from its location. Chase Hall was a temporary building which had been used during the war as the barracks of the SPAR's, the women's Reserve contingent of the U.S. Coast Guard. It was allocated for Museum use upon the condition that the Museum materials which had been given wartime storage in the National Guard armory warehouse on the waterfront be removed without delay—which meant that the Museum had to begin moving in before the necessary alterations were completed, with the result that much of the material had to be moved more than once, and some exhibits had to be shifted about as many as five times, as the task of rearrangement proceeded (fig. 86).

On 7 May 1947, the Museum, or rather some parts of it, was opened to the public in its new location at the former SPAR barracks (fig. 87). On the first day, the Museum received 137 visitors, and by the end of the month of May, it had been visited by more than 8,500 persons, indicating that the institution had not lost its hold on the public interest.<sup>17</sup>

Additional space was secured 18 months later in another somewhat dilapidated building located on Independence Avenue, Tampa Hall by name, the occupancy of which the Institute and Museum shared with other Government agencies.<sup>18</sup>

### *Scientific Advisory Board of the AFIP*

In this period, also, the Scientific Advisory Board of the Army Institute of Pathology, appointed by The Surgeon General, held its first meeting on 3 March 1947. Dr. Balduin Lucké, back in civilian status as professor of pathology at

<sup>17</sup> Annual Report, Army Institute of Pathology, 1947, p. 23.

<sup>18</sup> Annual Report, Army Institute of Pathology, 1948, p. 6.



FIGURE 85.—Sixth home of the Museum, Chase Hall, temporary quarters which were occupied for 13 years, 1947-1960.



FIGURE 86.—Materials awaiting inventory as the Medical Museum moved from warehouse storage to Chase Hall. Most of the items shown are part of the Huntington Collection of Comparative Anatomy.

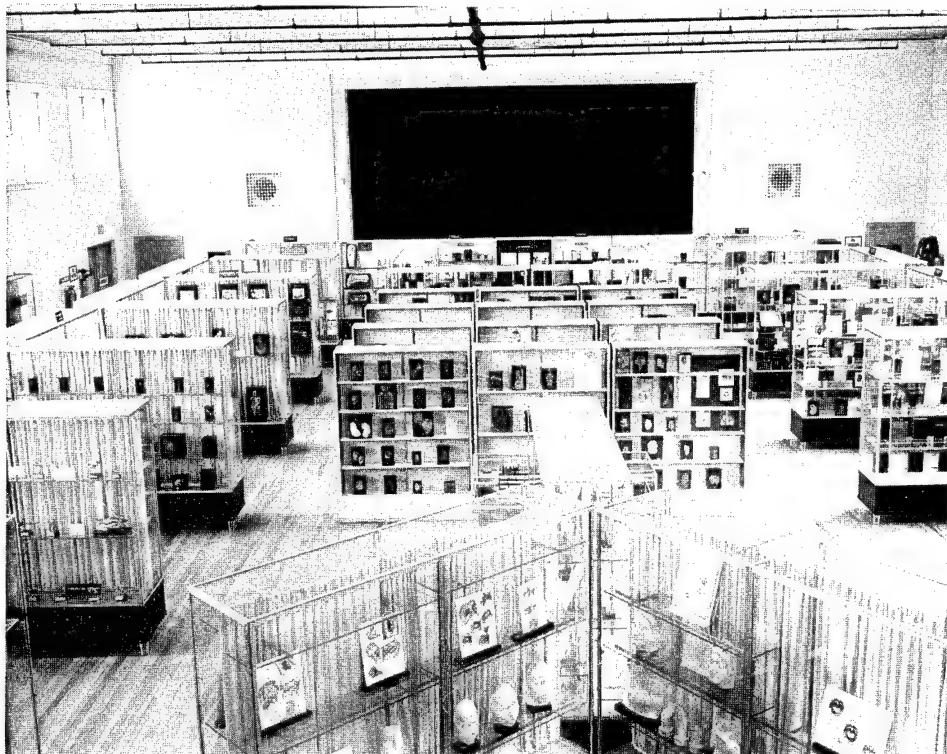


FIGURE 87.—A corner of the exhibits of the Museum as shown in Chase Hall.

the University of Pennsylvania, was elected chairman, to serve 1 year, and Dr. Robert A. Moore of Washington University, St. Louis, was named as secretary. At a second meeting, held on 13 April 1947, the Board discussed the plans for the new Institute of Pathology, its functions, and its administrative status, and recommended to The Surgeon General that facilities be provided for "research in pathology in the broadest sense," that the personnel of the Institute be "free to conduct research on an individual basis, in addition to participation in major problems of the Army Medical Department," and that the Director of the Institute "should be responsible directly to the Surgeon General."<sup>10</sup>

The reasoning behind these recommendations is expressed in the Annual Report of the Institute for 1947, submitted by General Dart, as follows:

Research in morbid anatomy constitutes but one of the phases of pathologic investigation. If research problems in pathology are to be properly correlated with medical problems as a whole, laboratory investigation and animal experimentation are indispensable. These phases of investigation are not available to members of the staff on the present premises of

<sup>10</sup> Annual Report, Army Institute of Pathology, 1947, pp. 14, 15.

the Army Institute of Pathology. This deficiency is keenly felt by members of the professional staff who are trained to think and work in broader terms, but who cannot exercise their abilities and tendencies in this direction under the present circumstances. The solution of medical problems is rarely, if ever, achieved by methods employed in morbid anatomy alone, helpful though they may be in pointing toward the right approach. The importance of the Army Institute of Pathology as the national center of pathology would make it mandatory for this Institute to take the lead in pathologic research. This, however, can only be achieved by providing the necessary facilities for all phases of pathologic study and investigation to members of a qualified staff.<sup>20</sup>

### *The Hawley Board*

An even broader concept of the place of the Institute of Pathology in the general scheme of military medicine after passage of the National Security Act of 1947 resulted from the appointment and deliberations of the Committee on Medical and Hospital Services of the Armed Forces. This Committee, commonly known as the "Hawley Board," was named in December 1947 by James V. Forrestal, the first Secretary of Defense, with Maj. Gen. Paul R. Hawley, who had served as Chief Surgeon, European Theater of Operations, and later as Chief Medical Director, Veterans' Administration, as chairman, and the Surgeons General of the three armed services as members. The committee was charged with the duty of making a "thorough, objective and impartial study of the medical services of the Armed Forces with a view of obtaining, at the earliest possible date, the maximum degree of coordination, efficiency and economy in the operation of these services."<sup>21</sup>

Early in its deliberations, the Hawley Committee approved and recommended to Secretary Forrestal the relocation of the Army Institute of Pathology in such a way as to make it of the greatest possible service to all three of the Armed Forces. These recommendations reaffirmed the points, made by the Scientific Advisory Board of the Institute, regarding the status of the Institute as a self-contained independent unit, the need of facilities for experimentation, and the direct responsibility of the Institute to The Surgeon General of the Army, all of which were "urgently recommended" to the Secretary. The Committee, however, reserved decision on the thorny questions of the name and the location of the proposed new Institute.<sup>22</sup>

On 4 February, the Hawley Committee named a subcommittee to study these questions of name, location, and organization. General Dart was chair-

<sup>20</sup> Annual Report, Army Institute of Pathology, 1947.

<sup>21</sup> Memorandum, Secretary of Defense James V. Forrestal, 1 January 1948, subject: Memorandum for Dr. Paul R. Hawley.

<sup>22</sup> Recommendations of members of the Hawley Board, to Secretary J. V. Forrestal, 5 January 1948.

man of the subcommittee, with Capt. William M. Silliphant, MC, USN, and Maj. Robert A. Patterson, USAF, MC, as members. After eight meetings, the subcommittee filed its report on 25 March 1948, together with seven inclosures, discussing in greater detail the questions of organization, function, and operation of a pathology service for the Armed Forces. The report recommended that the Army Institute of Pathology be located on the grounds of the Walter Reed General Hospital reservation, as an independent command, directly under the command of The Surgeon General of the Army, but with the control of the broad administrative and professional policies lodged in a board composed of the Surgeons General of the three forces; and that in recognition of the joint responsibilities of all the services, the name be changed to either the Military Institute of Pathology or the Armed Forces Institute of Pathology.

The subcommittee's report on name and location was not accepted by the Hawley Board which, at its meeting on 9 April 1948, instructed the subcommittee to confer further with representatives of other medical and hospital establishments in the Government service. The result was a supplemental report of the inability of the subcommittee members to agree on a location, resulting in separate and dissenting reports, with the Army representative favoring the Army Medical Center as a site; the Navy representative favoring the grounds of the National Naval Medical Center at Bethesda, Md., and the Air Force representative taking the position that a "new Armed Forces Institute of Pathology \* \* \*" should not be compromised by secluding it on a post of any one service" but that the organization should continue as an Army installation, furnishing service to all the armed forces and other interested agencies.<sup>23</sup>

On 4 October 1948, the Hawley Board filed its report on the Army Institute of Pathology in which, "after long and thoughtful evaluation of all the matters involved, and after further exploration of possible alternative solutions" the Committee concluded that the recommendations of the subcommittee in its original report constituted "the most acceptable and most practicable basis for solution of the problem."

The report of the Hawley Board on this subject was approved by Secretary Forrestal on 21 February 1949, with the request that its recommendations be put into effect as rapidly as possible. Outstanding among the recommendations for joint action were the declarations that the Institute should become "the central laboratory of pathology for all of the Armed Forces," with the appropriate change of name to the "Armed Forces Institute of Pathology"; that the

<sup>23</sup> Supplemental reports to Committee on Medical and Hospital Services of the Armed Forces.

Institute be relocated on the Walter Reed reservation; that it should be an independent unit directly under the command of The Surgeon General of the Army, although "broad administrative and professional policies" would be determined by a joint Board of Governors consisting of the three Surgeons General; that the Director of the Institute should be selected by the Board of Governors; that the major fields of training in the Institute should be in advanced pathological studies; and that the "experimental facilities of the Institute be adequate and sufficiently comprehensive to permit any type of investigation which may be important in the study of morbid anatomy and disease processes."<sup>24</sup>

With the approval of the Secretary of Defense, the way was cleared for a profound change in the status, organization, and functions of the Army Institute of Pathology. To work out the mechanism of the change, on 17 May 1949, Rear Adm. Joel T. Boone, MC, USN, Executive Secretary for the Interim Medical Coordinating Committee for carrying into effect the recommendations of the Committee on Medical and Hospital Services of the Armed Forces, appointed General Dart, Captain Silliphant, and Major Patterson as the subcommittee to deal with the recommendations relating to the Army Institute of Pathology.<sup>25</sup> In effect, the subcommittee was designated to work out the detailed "constitution and by-laws" of the new Armed Forces Institute, putting into effect the change in its status—a change which was effected, insofar as the Army was concerned, with the issue of the Department of the Army's General Orders Number 32 on 6 July 1949, with an effective date of 1 July.

There remained another massive obstacle to the achievement of the new Armed Forces Institute—congressional authorization and appropriation for the new building which was so desperately needed. That obstacle, too, was to be overcome—an accomplishment in which many men had a hand, but which could not have been overcome as it was nor when it was, without the determination, the drive, and the persistence of General Dart whose "prime objective" it was.

<sup>24</sup> Interim Report of Hawley Board, approved by Secretary James V. Forrestal in memorandum to Secretaries of the Army, the Navy, and the Air Force, 21 February 1949.

<sup>25</sup> Letter, Rear Adm. Joel T. Boone to General Dart, Captain Silliphant, and Major Patterson, 17 May 1949.

## CHAPTER XV

# New Name, New Home, New Responsibilities

The 80th Congress, it will be recalled, passed in June 1948 the bill which became Public Law 626—a law intended to pave the way toward obtaining a new home for the Army Institute of Pathology but which proved to be, instead, a roadblock on the legislative path toward that long-sought objective.

The genesis of the legislation was in H.R. 4122, introduced in the House of Representatives by Walter G. Andrews of New York on 9 July 1947, to authorize construction at various military installations. As introduced, the bill made no provision for the new Institute, an oversight which was corrected by an amendment proposed in the report of the Committee on the Armed Services, on 23 July 1947. In explanation of the amendment, the Committee reported that the proposed building to be erected at Forest Glen, Md., which included provision for a 1,000-bed hospital, would “be the nucleus of an Army medical research and graduate teaching center \* \* \*.” Such a center, the Committee reported, was an “urgent and immediate” need, due to the “comprehensive and global nature of modern military medicine” if the Medical Department was “to fulfill its mission of protection and care of troops, to keep pace with world-wide developments of significance to military medicine and to maintain a productive relationship with the medical profession at large \* \* \*. The Army Institute of Pathology and medical museum are presently housed in an antiquated building which seriously limits the important functions of this institution. Plans for the replacement of this building were interrupted by World War II and further delay would limit the valuable work of the institution to both Army and civilian medicine.”<sup>1</sup>

Before Congress acted on this bill, it was decided that no additional hospital beds for Army use were to be provided in the Washington area. In view of this

<sup>1</sup> (1) House of Representatives bills, 80th Congress, volume 20, Numbers 4000-4199. (2) H.R. Report Number 1048, 80th Congress, 1st session, volume 5, H.R. File Number 11122. *In Miscellaneous Reports*, Numbers 864-1114.

decision, Surgeon General Raymond W. Bliss asked the Budget Officer of the Department of the Army, and the Office of the Chief of Engineers to have the language of the bill amended by omitting the authorization for the new hospital, reducing the amount authorized for planning from \$850,000 to \$600,000, and revising the language specifying Forest Glen as the location of the Institute building to read "Forest Glen or vicinity"—language which was deemed to be broad enough to apply to either the Army Medical Center on the Walter Reed reservation, the National Naval Medical Center at Bethesda, Md., or the Forest Glen location.

### *Legislative Tangles*

The item in the enabling legislation which authorized the new Institute building was redrawn, leaving out the hospital feature and reducing, by \$250,000, the amount authorized for plans of the smaller facility but, through some inadvertence or misunderstanding, leaving the Forest Glen designation unchanged.<sup>2</sup>

With the legislation in this shape, it was decided to locate the new building on the Walter Reed reservation, and preliminary plans were undertaken by the architectural firm of Faulkner, Kingsbury, and Stenhouse, with the assistance of a planning group which included Brig. Gen. Raymond O. Dart and Col. A. L. Tynes, Chief of the Hospital Construction Branch of the Surgeon General's Office. To this group, there was added Maj. Colin F. Vorder Bruegge of the Medical Corps of the Army, who was transferred from Walter Reed General Hospital to serve as Assistant to the Director of the Institute, and his representative in matters pertaining to the new building. In this position Colonel (as he came to be) Vorder Bruegge rendered outstanding service.<sup>3</sup>

Planning, perforce of a preliminary character, was started in October 1948, only a month before the Comptroller General ruled that the expenditures authorized by Public Law 626 could not be made in relation to any site other than Forest Glen. Nevertheless, progress was made in preliminary planning through the use of fiscal year 1947 funds which were available up to 30 June 1949, and by 1 June of that year, these plans had been approved by the Government agencies directly concerned—Chief of the Engineers and the Medical Department of the Army.<sup>4</sup>

<sup>2</sup> Letters, Gen. R. W. Bliss to Director of Logistics, General Staff, U.S. Army, 23 December 1948, and 1st indorsement thereto, 3 January 1949. On file in historical records of AFIP.

<sup>3</sup> Annual Report, Army Institute of Pathology, 1948, p. 13.

<sup>4</sup> (1) *Ibid.*, p. 14. (2) Annual Report, Armed Forces Institute of Pathology, 1949, p. 24.

There matters stood for nearly a year, while studies were being made by the Hospital Division of the Bureau of the Budget, particularly directed to the relationship between the Institute and other Federal medical agencies, including those already located at the Walter Reed Army Medical Center.

In the course of that year, the Department of Defense had come into existence and, as one of the first fruits of that coordination of effort, the Army Institute had become the Armed Forces Institute of Pathology, serving all the Armed Forces—a change of status as well as a change of name, which was recognized in the proposed amendment to Public Law 626. In addition to the change of name, the proposed amendments called for location of the new building at the Walter Reed Army Medical Center and a reduction in the amount requested for planning from \$600,000 to \$350,000.

On 11 October 1949, the Bureau of the Budget gave its approval to the submission of the amendment to the Congress, provided that the plans for the new building should be changed so as to eliminate facilities which might duplicate existing medical research work, and to bring about a closer coordination between the new Institute and the Army Medical Center.

One week after this clearance by the Bureau of the Budget, the desired amendments were introduced in the House of Representatives by Representative Carl Vinson of Georgia, as H.R. 6478, and in the Senate by Senator Richard B. Russell of Georgia (for Senator Millard E. Tydings of Maryland), as S. 2737. On the next day, 19 October 1949, the first session of the 81st Congress ended, without action on the bills.<sup>5</sup>

### *Congressional Hearings*

The House moved first in acting on the amendment to the enabling act when, on 3 February 1950, a subcommittee of the Armed Services Committee held hearings on H.R. 6478. At these hearings, General Dart forcefully depicted the plight of the Institute, with its broad new responsibilities but its old limited and insufficient space. "The greatest handicaps to the further development of the institute," he said, "are the lack of space and the complete absence of experimental facilities in the existing obsolete building. Researches are, therefore, confined to pathologic anatomy and statistical analysis, which sharply limits full utilization of the collection of pathologic material."

As to the relation between the Institute and other Federal medical agencies, General Dart pointed out that the hospital capacity of the agencies which relied

<sup>5</sup> (1) *Ibid.*, pp. 25, 26. (2) Congressional Record, 81st Congress, 1st session, Senate, 18 October 1949, p. 14828, volume 95, part 11. (3) *Ibid.*, House, p. 14964.

upon the Institute as a "national pathology center"—the Armed Forces and the Veterans' Administration—totaled 232,132 beds, while the corresponding figure for Federal agencies not utilizing the Institute as a central laboratory of pathology numbered only 23,469. "Since the greater proportion of the beds operated by the Federal government," he said, "are occupied by military or former military personnel, the responsibility of maintaining the collection of pathologic material for training and research is definitely within the military service."<sup>6</sup>

Ten days later, on 13 February 1950, Mr. Lansdale G. Sasscer of Maryland, chairman of the subcommittee which had considered the subject, filed his committee's report recommending passage of H.R. 6539, a bill, introduced by Mrs. Frances P. Bolton of Ohio, which contained the amendatory material as H.R. 6478. One week later, on 20 February, Representative Bolton's bill was passed. In an extension of remarks in the Congressional Record, Mrs. Bolton expressed her appreciation to Chairman Vinson of the Committee on Armed Services for his courtesy in considering her bill, and went on to say:<sup>7</sup>

In modern medicine the Department of Pathology, the laboratory of any hospital or group of hospitals, is the heart of the facility. Accurate diagnosis and consequent treatment is largely dependent upon perfection of laboratory work.

The benefits to be derived from the change of location of the contemplated building have been recognized both by the Department of Defense and the Department of the Army. The fiscal advantage of the savings made possible as well as the value of the broader improvements involved has been given Bureau of the Budget approval. All three recommend passage of this bill.

Passed by the House, H.R. 6539 was sent to the Senate, where further hearings were held on 9 March 1950, with General Dart again appearing as the principal witness.

In answer to a question, General Dart gave an estimate of the final cost of the building, as revised and reduced, as "a little over \$10,000,000." "This has been reduced \$1,000,000," he added, "as the result of an agreement with the Bureau of the Budget and the Director of Medical Services, in which we agreed to reduce certain of the facilities that we had originally planned, to integrate it into the program at Walter Reed that would have required an additional expense of \$411,000 to expand facilities that are already overcrowded. So that with this agreement, the original estimate has been reduced a total of \$1,000,000

<sup>6</sup> H.R. Report Number 160, 81st Congress, 2d session, Congressional Record, House of Representatives, 13 February 1950, p. 1779, volume 96, pt. 2. In bound volume number 759, Proceedings and Debates, 1950.

<sup>7</sup> *Ibid.*, p. 1989, 20 February 1950.

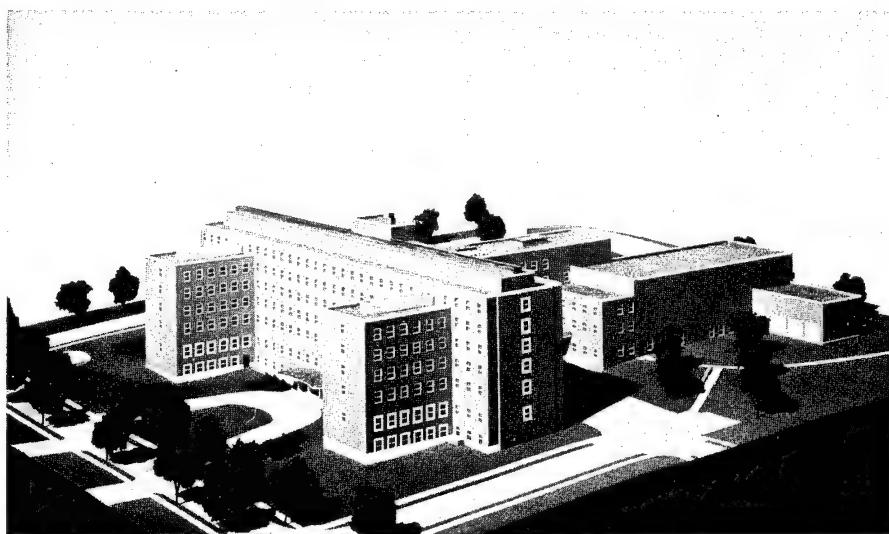


FIGURE 88.—Scale model of the new building as planned before the requirement that the structure be blast-resistant compelled a sharp reduction in floor space to stay within the appropriation.

in the building itself, and the saving of \$411,000 by eliminating this extra construction.”<sup>8</sup>

At the close of the hearing, the Committee voted unanimously to recommend the measure favorably and, on 19 April 1950, the House bill passed the Senate and was sent to the White House where, on 29 April 1950, President Harry S. Truman signed it to become Public Law 495, 81st Congress, 2d session.<sup>9</sup>

Any thought that passage of the amendatory enabling act was all that was required to permit the Institute and its architects to go ahead with final plans and specifications was strictly illusory, for once more, overriding fiscal policies intervened. On 4 May 1950, less than a week after the new law went into effect, the Director of the Budget Bureau informed the Secretary of Defense that funds for the new Institute building would be withheld, unless the cost of the building should be reduced from the original estimate of \$11,004,041 by 40 percent, or to approximately \$6,800,000. This meant, as a restudy of the plans showed, the elimination from the plans of the entire public museum wing, a 500-seat auditorium, the public vestibule and lobby, two large bulk storage areas, and—most serious of all—the elimination of space equivalent to two entire floors in the laboratory services wing (fig. 88).

<sup>8</sup> Typewritten copy of report, copied from Committee clerk's unpublished record. On file in historical records of AFIP.

<sup>9</sup> U.S. Statutes at Large, volume 64, part 1, p. 96, Chapter 139 (12 Stats. 376).

To achieve such reductions meant concentrating upon one floor the laboratories planned for three floors; eliminating the seminar-type teaching laboratories on two floors; cutting in half the space devoted to the American Registry of Pathology; reducing the working library from 25,000 volumes to 15,000; reducing the facilities for experimental animal research by 50 percent; reducing the Medical Illustration Service by 40 percent; and eliminating the public museum, though retaining the advanced teaching museum area and the museum laboratories.

On 16 May 1950, the whole subject was presented at a formal Bureau of the Budget hearing, at which Maj. Gen. George E. Armstrong, Deputy Surgeon General of the Army, explained that with these revisions, although the new building would have approximately double the area occupied by the Institute in the old building at 7th and Independence Avenue, it still "would provide space for only the basic activities of the Institute at the time of occupancy" and should, therefore, be designed so that wings could be added to care for expansion.

### *A Bomb-Resistant Structure*

Representatives of the Bureau of the Budget "agreed to support the revised plan and promised to release funds for final planning in the 'near future'"<sup>10</sup>—but there were other obstacles to meet and overcome. On a Sunday morning in June 1950, the North Korean Reds crossed the 38th parallel of North latitude and advanced against the Republic of Korea. The United Nations, led by the United States, came to the aid of the Republic. Presumably, because of a greater awareness of the possibilities of war, and doubtless, sharpened by the fact that the Soviet Union had burst its first atomic bomb, a Presidential directive, passed on by the Budget Bureau to The Surgeon General, required that the new building must be designed to meet the specifications of the National Security Resources Board for bomb-resistant structures.

Final and definite specifications for building bomb-resistant structures had not at that time been completed by the National Security Resources Board but, acting upon an estimate that conformity with the bomb-resistant requirement would add 10 percent to the cost of the Institute building, the Bureau of the Budget increased its May allowance of \$6,800,000 by that percentage, to a total of \$7,480,000, including the \$350,000 for planning and the balance of \$7,130,000 for construction.

<sup>10</sup> Annual Report, Armed Forces Institute of Pathology, 1950, pp. 10, 11.

New plans had to be drawn to incorporate the bomb-resistant features, with the expectation that the plans, drawn in the final weeks of 1950, with the cooperation of the Protective Construction Division, Office of the Chief of Engineers, and the National Security Resources Board, would receive Board approval early in 1951.

Efforts were made, without success, to have the full original estimate of \$11,004,041 included in the military budget for fiscal year 1951. Failing in this, the proponents of the new Institute undertook to get the \$7,130,000 for construction, according to the revised plans of May 1950, included in the fiscal year 1952 military budget.<sup>11</sup>

Before this could be done, however, the impact of the Korean war called for a revision of the entire military program and necessitated the filing of a second supplemental fiscal year 1951 budget of high-priority items. The \$7,130,000 item was included in the Medical Department figures in two bills, introduced in the House of Representatives by Mr. Vinson on 11 December 1950—H.R. 9893, an authorization, and H.R. 9920, an appropriation. The bills passed the House on 15 December 1950, and the Senate on 21 December. Both were signed by President Truman on 6 January 1951, to become Public Law 910 and Public Law 911, 81st Congress, 2d and closing session.<sup>12</sup>

### *Going Ahead on the New Building*

Before the legislative obstacles and delays were finally surmounted, General Dart, the vigorous leader of the movement for the new building, had retired on the last day of July 1950, and had been succeeded by another vigorous advocate of the new Institute, Col. (later Maj. Gen.) Elbert DeCoursey (fig. 89).

The new Director was a native of Kentucky, and a graduate of the University of Kentucky, with the M.D. degree from the Johns Hopkins University School of Medicine. He joined the Medical Corps of the Army in 1929, had served as pathologist at several major Army hospitals, and had been active in research in the field of atomic energy and radiobiology.

The retiring Director, General Dart, was signally recognized by the publication of an entire number of *The Military Surgeon* in his honor. Issued in October 1951, the issue contained forewords by Maj. Gen. George E. Armstrong, who had succeeded General Bliss as The Surgeon General of the Army; by Rear Adm. H. Lamont Pugh, Surgeon General of the Navy; by Maj. Gen.

<sup>11</sup> *Ibid.*, p. 12.

<sup>12</sup> Congressional Record, 81st Congress, 2d session, House of Representatives, 6 January 1951, page 17139, volume 96, part 12. In bound volume number 769, Proceedings and Debates, 1951.



FIGURE 89.—Brig. Gen. Elbert DeCoursey, second Director, Armed Forces Institute of Pathology, 1950-1955.

Harry G. Armstrong, Surgeon General of the Air Force, and by Brig. Gen. Elbert DeCoursey, successor to General Dart at the Institute; an appreciation by Col. James M. Phalen, editor of the journal; and an acknowledgment by Dr. Hans F. Smetana, head of the Pathology Division of the Institute and chair-

man of the editorial committee which was responsible for the tribute to General Dart.

The body of the issue contained 20 scientific papers, prepared by 34 authors who were, or had been, connected with the Institute. Dr. Smetana assembled these papers, "under the guidance of Doctors Howard T. Karsner and Balduin Lucké."<sup>13</sup>

General DeCoursey, with the continuing help of Colonel Vorder Bruegge, drove ahead on the final steps toward translating, from sheets of drawing paper to the reality of concrete and steel, the building which had been authorized and for which the appropriation had been made (fig. 90).

Release of the appropriated funds was held up for almost 4 months because of administrative delays, but the time was not entirely lost. The delay afforded an opportunity to submit the preliminary drawings, as revised, to a meeting of the Scientific Advisory Board, held on 31 March 1951. At this meeting, Mr. Slocum Kingsbury, of the architectural firm, outlined the essential features of the bomb-resistant plan, and Colonel Vorder Bruegge, whose part in planning the interior floor plans can hardly be overestimated, used visual aids to demonstrate the arrangements, which became the subject of active and keenly critical review by the Board. Close attention was paid to the facilities for investigative laboratories, which were to be grouped on both sides of a service space in which the pipes, cables, and conduits were to rise, with outlets to each laboratory. The Board recommended that these utilities should include piping for hot and cold water, steam, compressed air and vacuum, and heavy-duty electrical lines. These and other recommendations of the Board were included in the final set of preliminary drawings, completed in April 1951.<sup>14</sup>

On 8 May 1951, the Washington District Office of the Corps of Engineers, under whose direction the construction was to proceed, employed the firm of architects which had drawn the preliminary plans to complete the drawings necessary for letting construction contracts—a task which involved making more than 250 sheets of drawings, including more than 50 sheets for the electrical installations alone, and which required more than 6 months to finish.<sup>15</sup>

### *Breaking Ground*

Meanwhile, preparation of the site for the new building was started on 10 July 1951, with the traditional ground-breaking ceremonies. General

<sup>13</sup> The Military Surgeon, volume 109, number 4, October 1951.

<sup>14</sup> (1) Minutes, eighth meeting, Scientific Advisory Board, Exhibit 3. (2) Annual Report, Armed Forces Institute of Pathology, 1951.

<sup>15</sup> *Ibid.*, pp. 21, 22.



FIGURE 90.—Lt. Col. Colin F. Vorder Bruegge, who was of immense assistance in developing the details of the new building.

DeCoursey, who presided, presented to the group of some 600 in attendance, the curators and the director who, since 1918, had sought a new building—Brig. Gen. George R. Callender, "who started the American Registry of

Pathology"; Col. Virgil H. Cornell, "who modernized the Museum exhibits"; Col. James E. Ash, "who transformed the organization into an Institute of Pathology" and who upon that day had telephoned from Buffalo, N.Y., to express his disappointment at being unable to attend; and Brig. Gen. Raymond O. Dart, "who extended the Institute's services to all the Armed Forces, and who successfully laid the groundwork that obtained the new building."

Among the other distinguished guests presented by General DeCoursey were Fred A. McNamara, Chief of the Hospital Branch, Bureau of the Budget, introduced as "the sympathetic man who learned of our plight, saw the need, and obtained the necessary executive support"; Dr. Arnold Rich of the Johns Hopkins University, the current chairman of the Scientific Advisory Board; and the three deputies for the Surgeons General who formed the Board of Governors of the AFIP—Col. Hugh R. Gilmore, Jr., for the Army; Rear Adm. John Q. Owsley for the Navy, and Col. John F. Dominik for the Air Force.

Maj. Gen. Paul H. Streit, Commanding General of the Walter Reed Army Medical Center, welcomed the assemblage to the ground-breaking ceremony. Of the three ceremonies customary in connection with the construction of new buildings—the breaking of ground, the laying of the cornerstone, and the day of dedication—he described the ground-breaking as the "least spectacular" but the most "soul-satisfying occasion," as it "represents, at last, a beginning—a first evidence that dreams and hopes and plans have crystallized into reality" (fig. 91).

Yet, General Streit said, "we are not uncovering the sod on a new idea; we are celebrating the ripening—the coming-of-age—of an old one. The 'Army Medical Museum,' as the institution was first called, was authorized by the young and forward-thinking Surgeon General Hammond, in the early days of the Civil War. The plan to include the Museum as an integral part of a medical center was proposed by Lt. Col. William Cline Borden in the early post-Spanish-American War period. Surgeon General Ireland, one of the great Army surgeons general, secured the necessary land in 1919 and made it a part of the hospital grounds."

Voicing "our great pride in the past accomplishments of the late Army Medical Museum," he declared that with the additional support of the other services "together we can forge an even more illustrious future."

Speaking for one of the "sister services," Rear Adm. C. J. Brown, Deputy Surgeon General of the Navy, struck a keynote when he said:

It is, to me, an important and most interesting happenstance that the first permanent edifice to be built under the aegis of the unification of the Armed Forces should be, not an

## ARMED FORCES INSTITUTE OF PATHOLOGY

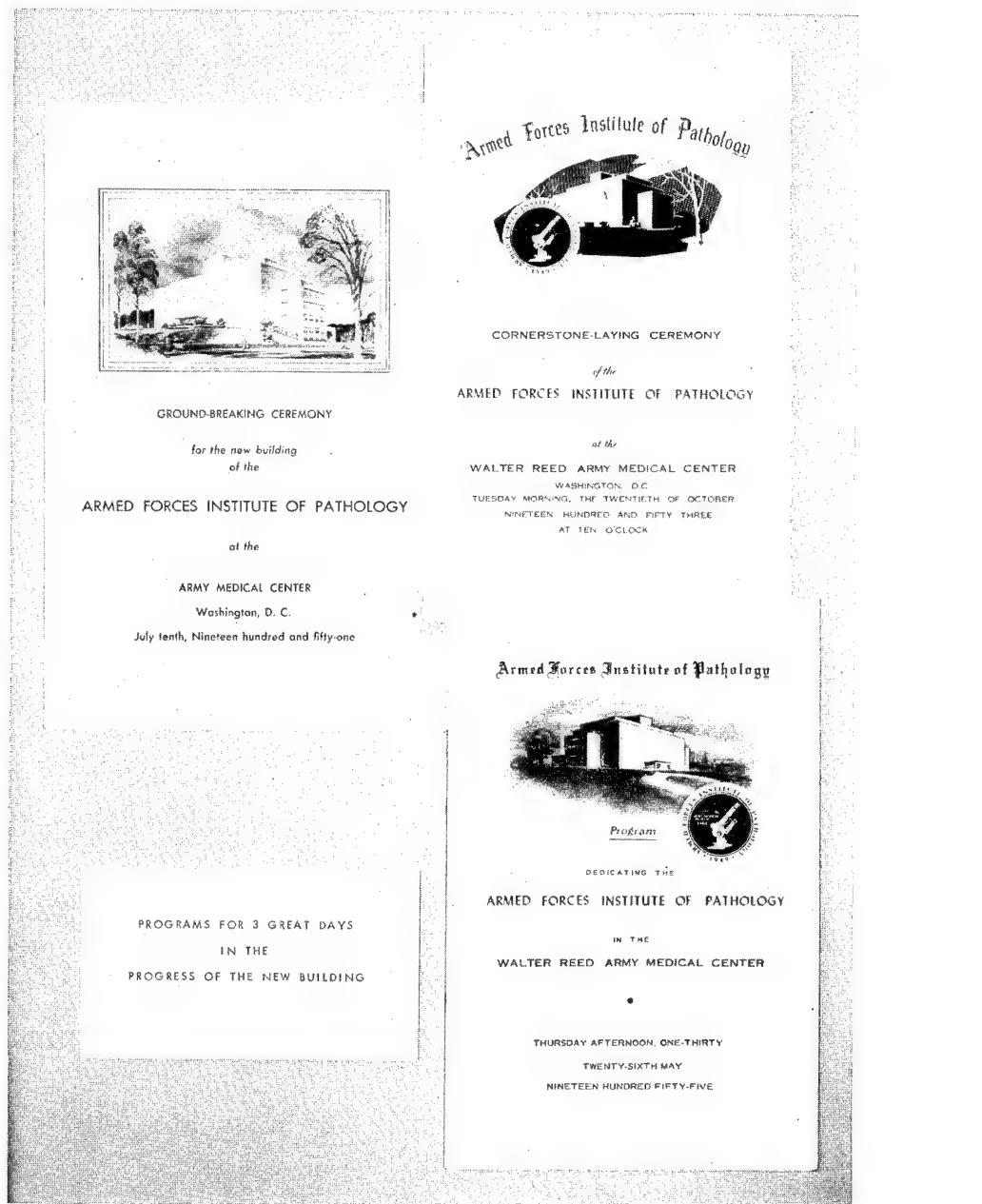


FIGURE 91.—Programs for the three ceremonial steps in the erection of the AFIP building.

arsenal, not a tank factory nor an airplane plant, but an institute equally useful in peace as well as in war, devoted to the cause of humanity, scientific advancement, and international Medicine.

Speaking for Surgeon General Harry G. Armstrong of the Air Force, Brig. Gen. Earl Maxwell emphasized the point that the Air Force had been able to utilize the services of the Institute and would "continue to enjoy that privilege \* \* \*. There is no other repository anywhere which can supply us with so much valuable information on the causes, effect, and treatment of many epidemic and tropical diseases."

Continuing, the Air Force spokesman said:

Infectious jaundice, typhus, malaria, cholera, high altitude frost bite and various other exposure problems are but a few of the host of diseases and conditions which confront our military personnel in varying environments in all parts of the world. In its aims and purposes, the Institute represents the hard core of our attack on disease and war injuries, which ordinarily take such a terrific toll of military effectiveness \* \* \*. In these days of increasingly devastating conflicts, this institution will become of even greater importance than during the past. New types of warfare, including atomic weapons, make additional pathological facilities mandatory for the prevention and treatment of casualties.

Vice Adm. Joel T. Boone, MC, USN (Ret.), and Medical Director of the Veterans' Administration, spoke of the deep interest and intense pride taken by that administration in the achievements and advances by the AFIP. General Callender, he noted, was now Chief of the Pathology Division of the Veterans' Administration, which took "pride and pleasure in the very real part it is playing in this important example of medical teamwork."

Maj. Gen. George E. Armstrong, Surgeon General of the Army, the principal speaker for the occasion, emphasized "the splendid achievements of several who have played a part in today's culmination of these years of dreaming and working," mentioning General Callender, Colonel Cornell, General Dart, and Colonel Ash. "It is through these individuals," he said, "together with the Surgeons General of the Army of the past several decades, some of whom are here this afternoon, that finally after years of effort we come to the fruition of our vision."

Emphasizing the part played by the Hospital Branch of the Bureau of the Budget, General Armstrong expressed appreciation of the contributions of Mr. McNamara and his associates—"because, believe it or not, in the final sessions that we have been through no professional person, or persons, have fought any harder than these individuals representing the Executive portion of our Government."

Disclaiming any intent to recite the progress of the Institute through its "four-score and nine years" of life, General Armstrong contented himself with a brief account of General Hammond and his "far reaching, and, I am sure, at that time considered visionary, recommendations" and invited attention "to the steps which took us from the Museum stage, which, in the minds of the public both lay and professional, tended to emphasize the dead and the dead past" to the newer and broader institute whose "primary concern is the living, and not the dead."

At the conclusion of General Armstrong's address, Colonel Vorder Bruegge handed the ceremonial shovel to General Dart, who explained its symbolism. "It is," he said, "from the traditions of the past in the old Museum"—the blade was "made from the hinges of cases in the old museum, some of which go back to the days when the Museum was located in Ford's Theater; the mold was made in the Institute; the casting made by the Naval Gun Factory in Washington; the shaft was turned from wood saved from the old cases when they were replaced by newer and sturdier ones; and the handle was made from a microscope in the old Museum."

"Most important of all," he said, "and the symbol of the part that this Institution is going to play in American medicine in the future, is a microscope slide that was prepared by one of the first members of the staff of the Museum, Dr. J. J. Woodward, one of the earliest photomicroscopists in the United States. This slide, now inlaid in the shaft of the shovel, has been preserved since before 1880."

Handing the shovel to General Armstrong, General Dart stressed the fact that he was "merely the agent of many, many individuals, men and women, in the military service and in civilian life, who have worked so hard for so many years to bring this occasion about."

The occasion was climaxed by the turning of a clod by General Armstrong, after which the elaborately symbolic shovel and the first clod were turned over to the Museum for preservation (fig. 92).<sup>16</sup>

The breaking of ground and work of preparing the site for the building—work which involved moving bodily five large frame residences (fig. 93) to another part of the Walter Reed reservation—did not bring an end to the planning of detailed features. Rather, it was discovered that "throughout the design period plans for a building of this type never become static." Particularly was this true of the new home for the Institute, not only in the period of design but also in the period of construction, and even in the finished building,

<sup>16</sup> Annual Report, Armed Forces Institute of Pathology, 1951, exhibit 9: Ground Breaking Ceremony.



FIGURE 92.—The turning of the sod. A. Maj. Gen. George E. Armstrong wields the ceremonial spade.

because of the in-built flexibility of its plan, a feature for which Colonel Vorder Bruegge was in a large degree responsible.

The building is essentially a grouping together of units of space, in a repetitive modular arrangement under which advance preparation was made for the quick, easy, and inexpensive rearrangement of partitions between units. The module of space which was to determine the overall size was taken to be 11 by 20 feet for a laboratory unit in the central core of the building, and 11 by



B

FIGURE 92.—Continued. B. The symbolic spade.

18 feet as a unit of office space along the outer walls. All necessary utility outlets were to be available in each unit, while larger units could be created by the ready removal of partitions. As part of the planning, the District Engineer built a mockup of an individual laboratory module in which it was possible to pretest ideas for the placement of equipment and fixtures, including laboratory benches for both sitdown and standup use, and also to try out flooring materials and different color schemes.

With excavation underway (fig. 94), the planning group turned its attention to the equipment for the new building—an activity which was to become a major undertaking in 1952. On the first working day of that year, the District Engineer placed sets of the contract drawings in the hands of construction companies who desired to bid on the job, allowing 60 days for study of the plans and specifications. Bids were received from nine prime contractors, ranging from \$4,924,000 to \$5,787,000—figures which did not include several features, such as elevators, structural steel purchased in advance, and electrical switchgear, amounting to a total of \$865,000. The low base bidder was the firm of Cramer and Vollmerhausen, of Washington, to which the contract was let on 7 March 1952.<sup>17</sup>

### *Laying the Cornerstone*

The outer walls of the building were halfway up when, on 20 October 1953, the second ceremonial occasion in its progress was observed with the laying

<sup>17</sup> Annual Report, Armed Forces Institute of Pathology, 1952, section III.

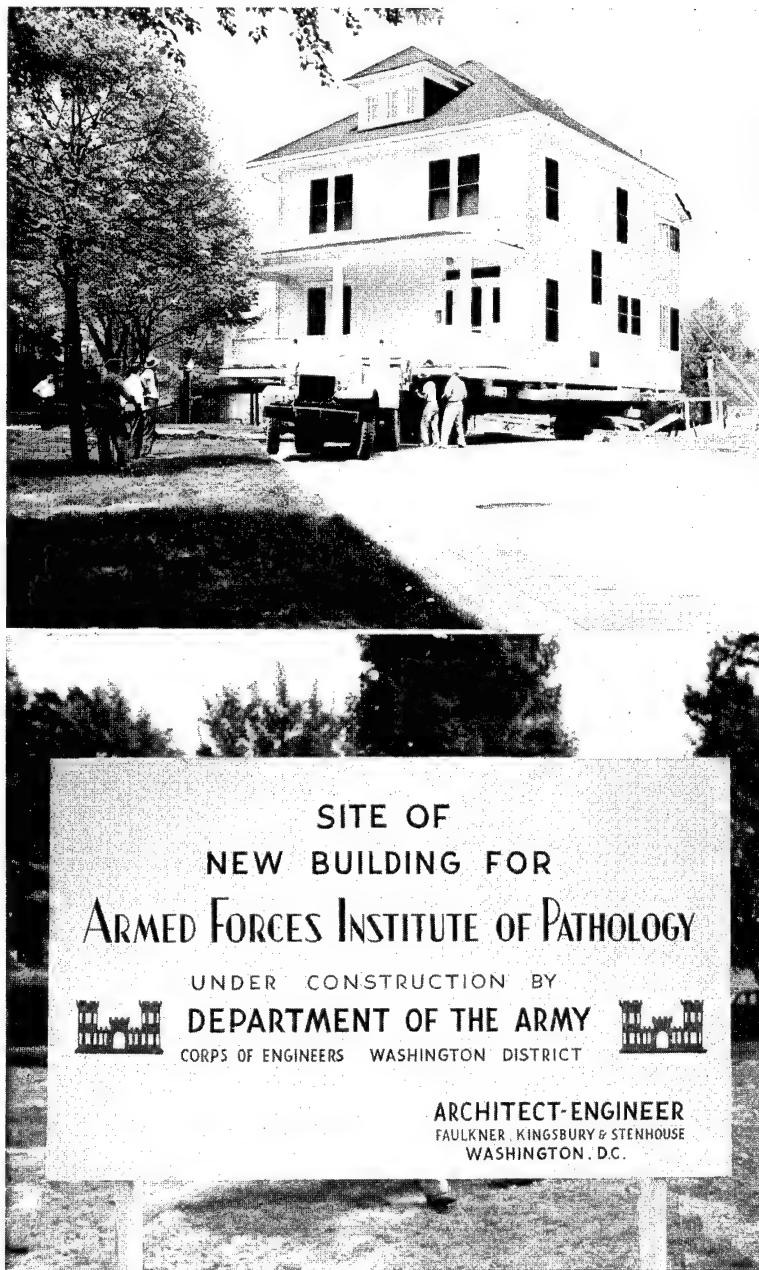


FIGURE 93.—Clearing the site of the new building.

of the symbolic cornerstone. Welcoming the assembled group of some 1,500 persons to the Walter Reed Army Medical Center, Maj. Gen. Leonard D. Heaton, Commanding General of the Center, expressed the pleasure and pride



FIGURE 94.—Excavation troubles.

with which he viewed the addition to the medical installations on the Walter Reed grounds of "this great center of pathology, unique and unparalleled in the field of medicine."

The principal address at the cornerstone laying was delivered by Dr. Melvin A. Casberg (fig. 95), Assistant Secretary of Defense (Health and Medical), who, in a reminiscent mood, traced the development of "this great new Armed Forces Institute of Pathology as the culmination of the dreams of a host of distinguished men of American medicine." The removal from the "old red brick building," with all its associations and atmosphere, stirred many vivid recollections—of John Shaw Billings whose "professional prestige, influence and foresight did much to obtain the close cooperation of these military establishments, medical schools \* \* \* and other scientific institutions"; of Walter Reed who "in that same building completed his work on typhoid fever," and "there, he and Carroll formulated plans for the famous yellow fever studies."

World War I, Dr. Casberg said, "saw a resurgence of activity at the Museum," and, in 1920, the "more recent era" was initiated by General Cal-



FIGURE 95.—Cornerstone laying ceremony. Dr. Melvin A. Casberg addresses the audience and spreads the mortar for the cornerstone.

lender, striking out in a direction in which his successors had continued, with ever-enlarging responsibilities. Notable among these enlargements was the designation of the Institute as the central laboratory of pathology for the "rapidly expanding medical program of the Veterans' Administration."

"This, then, is the cornerstone of American medicine of today," Dr. Casberg said, "representing the united aims and efforts of civilian physicians as well as those in the Armed Forces."

Giving instances of the Institute's accomplishments in its three basic activities—consultation and diagnostic services, teaching and investigation—Dr. Casberg continued:<sup>18</sup>

Some may have considered the Armed Forces Institute of Pathology as a repository of museum specimens and tissues dusty with age; specimens deposited to satisfy the morbid curiosity of the visiting populace. Nothing could be further from the truth, for housed within the walls of this institution are the scientific keys which have and will continue to unlock the secrets of disease. Here is demonstrated the close collaboration between Armed Forces and civilian medicine, a joint effort so smoothly woven that the identity of individual civilian and military threads are lost in the warp and woof of the composite produce \* \* \*.

As I spread the mortar which will unite the cornerstone with this building, it shall be my prayer that all our medical resources, civilian as well as military, similarly shall be cemented in a united fight against disease and for the preservation of our country.

The building which was thus treated as a symbol of collaboration in medicine was so nearly completed by September 1954, when the International Congress of Clinical Pathology and the triennial meeting of the International Society for Geographic Pathology were held in Washington, that the delegates from foreign countries were able to visit it and inspect its features, inside and out.<sup>19</sup>

Roof and floor slabs, also of heavily reinforced concrete, furnish internal bracing of the mass, as do transverse concrete walls and the greater depth of the mass due to the double-corridor design of the interior. Necessary openings in the outer walls of the central mass are closed with blast-resistant doors. The heart of the building is in the central block of research laboratories, located on both sides of a 3-foot-wide "mechanical core," extending lengthwise of the building, through which each laboratory is supplied with such essentials as electricity, water, gas, and compressed air. Surrounding this rectangular block of laboratories is a passageway, separating the laboratories from the offices which are ranged against the windowless outer walls. At the ends of the building up

<sup>18</sup> Annual Report, Armed Forces Institute of Pathology, 1953.

<sup>19</sup> Annual Report, Armed Forces Institute of Pathology, 1954, p. 1.

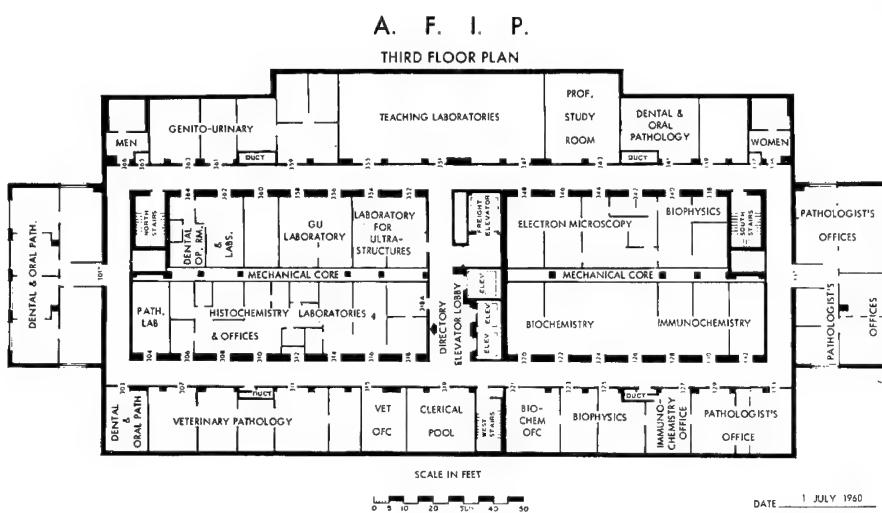


FIGURE 96.—Typical floor plan of new Armed Forces Institute of Pathology building.

to the height of four stories above ground are windowed "blisters" containing offices. Blast-resistant doors on each floor afford communication between the main mass of the building and the offices in the two outer projections (fig. 96).<sup>20</sup>

By the time the building was inspected by the international visitors, installation of equipment and furniture had begun and, on 20 January 1955, the monthly meeting of the Medical Service Corps of the Army was held in the new AFIP building auditorium. At this first meeting in the hall, which had not yet received its name of Dart Auditorium, Col. Byron L. Steger, MC, of the Institute staff, presented a paper on "Field Medical Services in Korea."<sup>21</sup>

By mid-February 1955, the Institute had begun to move into its new quarters. The movement, skillfully planned by General DeCoursey, was completed with a minimum disruption of work in mid-March, but it was not until May that the building was formally dedicated.<sup>22</sup>

### *Dedication*

Two days, 26–27 May 1955, were devoted to the dedicatory exercises (fig. 97). On the afternoon of the first day, President Dwight D. Eisenhower delivered

<sup>20</sup> Vorder Bruegge, Colin F.: New Building Facilities for the Armed Forces Institute of Pathology, *Scientific Monthly* 79: 81–89, August 1954.

<sup>21</sup> Announcement, in files of AFIP.

<sup>22</sup> Annual Report, Armed Forces Institute of Pathology, 1955, p. 3.





FIGURE 98.—President Dwight D. Eisenhower dedicates the new building.

the address of dedication, before an outdoor audience of 3,000 persons (fig. 98). That evening, Dr. Wendell M. Stanley of the University of California, noted biochemist and Nobel laureate, gave the principal scientific address. Appropriately entitled "New Horizons," Dr. Stanley's address dealt with what is known and what is not yet known in the "borderline between the living and the nonliving" in the world of the virus.

"About the turn of the century," he said, "there was a something discovered that acted like a cell \* \* \*. This something or other that acted like a cell would pass filters which were known to hold back all of the cells then known and this something would cause disease when applied to certain other susceptible cells. During the disease producing process it would be multiplied many millions of times over \* \* \*. This mysterious something turned out to be a virus \* \* \* smaller than the accepted living cells," but with characteristics "recognized as those of living cells."

In an inspiring lecture, outlining what has been discovered as to these very real materials and posing some of the challenges to further search, Dr. Stanley concluded:

I do not know the answer to this structure of nucleic acid at the molecular level. It is one of the unanswered questions. If this can be answered, if certain other problems

of the manner of reproduction of viruses can be answered, I think we will have gone a long way towards explaining the nature of life itself.

On the second day of the dedicatory exercises, 10 scientific papers prepared by 14 current and former members of the Institute staff were presented and discussed.

For the nonscientific generality of the public, these papers, written in technical language and addressed to a technically trained audience, were impressive but not altogether comprehensible. Better understood were the earlier remarks of the President of the United States, who said that he "did not come here to talk scientifically" but to dedicate a "great building" which, he was told, was "arranged better and more efficiently for the conduct of the work here to be done than any other that this country has erected."

In introducing the President, Secretary of Defense Charles E. Wilson spoke of the new building as an example of unification. The President carried the idea further, saying, " \* \* \* some years ago those of us who were advocating unification of the services saw something of this kind in the offing, even though we were ignorant of the exact form these developments would take. For that reason I couldn't be happier that all of the services are combined in this effort \* \* \*.

"And so I dedicate this building to the conquest of disease so that mankind, more safe and secure in body, may more surely advance to a widely shared prosperity and an enduring and just peace."<sup>23</sup>

<sup>23</sup> Dedication, Armed Forces Institute of Pathology, Walter Reed Army Medical Center, 26-27 May 1955. Military Medicine 117: 176-306, September 1955.

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## CHAPTER XVI

# Carrying On in the “Old Red Brick”

During the decade of determined effort to procure and occupy the new building, there had been no cessation or slackening of the work which went on in the cramped and crowded corridors and rooms of the building, which for nearly 70 years had been the home of the Museum and its offspring, the Institute (fig. 99). On the contrary, sharp increases in the output of the staff were necessary to meet the rising demand for the fundamental services of consultation, education, and research in pathology.

In 1947—the first year in which the change of emphasis from “Museum” to “Institute” became fully effective—newly accessioned cases numbered 21,764. Two years later, after the field to be covered had been broadened from the Army to the Armed Forces, the number of new cases rose to 36,029—and the real rise in the flow of materials into the Institute had just begun.<sup>1</sup> Already, however, the “heavy and unrelenting pressure of the daily routine” was imposing a “serious hardship on all members of the professional staff.” As the Director of the Institute said, in his report for 1949, it was “barely possible to keep up with the incoming material during the working day when ancillary personnel is available, study and scientific research must be relegated to nights and week ends.”

In the year 1950, the first full year of operation as the Armed Forces Institute, the number of cases received went up to 49,518, despite the fact that 13 histopathology centers had been established for the dual purpose of facilitating diagnosis and consultative services by providing them “in closer geographic relationship to Armed Forces Hospitals” and reducing the pressure upon the Institute by screening out commonplace specimens before submittal. Under the new regulation, materials from all completed autopsies were still to be sent in, but surgical specimens sent in were to be limited to those which had “future administrative, scientific, or follow-up value.”<sup>2</sup>

Instructions were made more specific in a special regulation issued on 8 June 1950, which required that all specimens derived from surgery on tumors

<sup>1</sup> Annual Report, Armed Forces Institute of Pathology, 1947, p. 11.

<sup>2</sup> Annual Report, Armed Forces Institute of Pathology, 1950, p. 23.



FIGURE 99.—Close quarters. A. Personnel of the Histopathology Laboratory worked under great difficulties in the old red brick building in the 1940's. B. File cases were not only stacked 11 high, but were frequently located in halls or corridors.

or tumor-like conditions and other surgical specimens as to which final or confirmatory diagnoses were called for, be sent in to the Institute. Other surgical specimens did not need to be forwarded to the Institute unless they contained noteworthy lesions. As a guide to the kind of materials which were not required to be forwarded, the special regulation listed 11 classes of such specimens, including such commonplace items as appendices, tonsils, and adenoids, and such comparatively rare items as arms and legs amputated for injury or infection. Even as to these excepted groups, specimens were to be forwarded if there was any doubt as to their importance.<sup>3</sup>

For a time, it seemed that despite the effort to apply restrictions, nothing would diminish the flow of materials into the central laboratory of the three armed services and the Veterans' Administration. In 1951, the year after the new regulations went into effect, the cases accessioned numbered 52,378. In 1952, the flow reached its high water mark with 118,704 cases, of which 29,008 came from deactivated naval hospitals and 89,099 from current operations (fig. 100). Accessioning was completed that year for only 67,909 cases, the remainder of nearly 50,000 cases going to swell the massive backlog of work. "Lack of adequate laboratory and office space continues to be a most distressing situation," the Director reported. "Relief must await movement into the new building in 1954."<sup>4</sup> Slight relief was found in 1953, when 79,212 cases were received—nearly 10,000 fewer than those from current operations in the previous year. There was a further reduction to 64,836 cases in 1954, and it appeared that efforts to bring about a more manageable flow of materials into the Institute were showing results.<sup>5</sup>

Even so, the daily inflow of pathological materials requiring attention averaged some 200 cases a day—a situation which made necessary some system for sorting out the incoming cases which required expedited handling. Since no one could be quite so well acquainted with the requirements of each case as the doctor submitting the specimen, contributors were asked to indicate the handling desired under the proper one of four classifications. The code word "Telegraph" called for immediate attention and the fastest service which could be given, with reports made to the contributor by cable, radio, telegram, or telephone. The code word "Rush" called for handling as speedily as possible, second in priority only to requests under "Telegraph," with answers sent out by airmail. "Comment" requests were answered with staff findings

<sup>3</sup> Special Regulations No. 40-410-10; Bureau of Medicine and Surgery Circular Letter No. 50-50; Air Force Regulation No. 160-55, pp. 2-6.

<sup>4</sup> Annual Report, Armed Forces Institute of Pathology, 1952, p. 43.

<sup>5</sup> Annual Reports, Armed Forces Institute of Pathology, 1951, p. 6; 1952, p. 5; 1953, p. iii; 1954, p. 1.



FIGURE 100.—Mary Frances Gridley, compiler of a manual of Histologic and Special Staining Techniques issued in 1952. After her death in December 1954, her fellow workers had the manual reissued in a memorial edition.

concerning autopsies, surgical materials, or a questionable change in the tissues submitted, with reports going out by ordinary mail. Material submitted under the code word "Routine" was acknowledged with any comment which was warranted by the material, but handling was not expedited.<sup>6</sup>

<sup>6</sup> Annual Report, Armed Forces Institute of Pathology, 1950, pp. 23, 24.

Such increases in the work of the Pathology Department were matched in greater or lesser degree by rising workloads in the other departments—the American Registry of Pathology; the Medical Illustration Service; the Medical Museum; and the Administrative Service, set up in 1947 to perform those functions which were essential to the operation of the four basic departments but were not exclusively related to any of them.

With such increases in the work to be done, there had to be increases in the staff which had the work to do. The staff, including commissioned and enlisted military personnel and civilian employees, numbered 172 at the end of 1946; 230 a year later; 251 in 1949; and 282 in 1950. In 1951, the staff numbered 338, including 15 officers attached for training in pathology as one step toward meeting the general shortage of pathologists, to which was ascribed the Institute's inability to fill all its authorized positions for medical officers and the failure to secure applicants for all the Institute's openings for residencies. By the end of 1952, the staff had increased to 338, and a year later had gone up to 365. The figure rose again to 438 by the end of 1954, the last year in the old building.<sup>7</sup>

### *The Cooney Committee*

In anticipation of the removal of the Institute from its old quarters to the new building which was beginning to rise on the grounds of the Walter Reed Army Medical Center, Surgeon General George E. Armstrong recommended that "studies be made of the missions and operational procedures of the Armed Forces Institute of Pathology." This recommendation was supported by the Armed Forces Medical Policy Council of the Department of Defense and, on 12 December 1952, Dr. Melvin A. Casberg, chairman of the policy council, sent to General Armstrong a memorandum requesting the establishment of an ad hoc committee to study the "scope and effectiveness" of the program of the Institute.

The Committee, set up on 14 January 1953 by Maj. Gen. Silas B. Hays, Acting The Surgeon General, consisted of Brig. Gen. James P. Cooney, representing the Surgeon General of the Army; Capt. John H. Ward, representing the Surgeon General of the Navy; Brig. Gen. Earl Maxwell, representing the Surgeon General of the Air Force; Brig. Gen. Elbert DeCoursey, representing the Institute; and Robert A. Moore, M.D., dean of the Washington University Medical School at St. Louis, and chairman of the Scientific Advisory Board of

<sup>7</sup> Annual Reports, Armed Forces Institute of Pathology, 1947, Exhibit A; 1948, p. 2; 1949, p. 8; 1950, pp. 2-5; 1951, pp. 12, 13; 1952, p. 11; 1953, p. 5; 1954, p. 57.

the Institute. General Cooney was chairman of the ad hoc committee, which accordingly was known informally as the Cooney Committee.

The Committee's conclusions and recommendations were asked for as to the services of the Institute to the Armed Forces, other Government agencies, the civil professions, and foreign governments, and also as to its educational program. Special attention was directed to possible changes in the missions of the Institute, in the next few years, with consequent expansion or curtailment of activities.

In a report submitted on 9 March 1953, the Cooney Committee recommended that the services of the Institute to the three Armed Forces be continued under the terms of the charter embodied in Army Regulations No. 40-410, Navy Bureau of Medicine and Surgery Circular Letter No. 50-8, and Air Force Regulation No. 160-38, issued jointly by the three services on 15 February 1950, and enlarged upon in detail in a descriptive circular "Central Facilities Provided for Department of Defense by Armed Forces Institute of Pathology," issued on 8 June 1950, as Special Regulations No. 40-410, Bureau of Medicine and Surgery Circular Letter No. 50-50, and Air Force Regulation No. 160-55.

In addition to the services of the Institute to the Armed Forces, the Committee approved the arrangement with the Veterans' Administration as "an essential part of a vast plan of collective research whereby former military personnel may be followed through the various medical vicissitudes of their lives to old age and death," to the end that medical services for the military might be improved. The Committee likewise approved the cooperative arrangements between the Institute and the U.S. Public Health Service, the Atomic Energy Commission, and the medical, dental, and veterinary professions.

The Committee further approved the Institute's instruction in advanced pathology as part of a general program of residencies, postresidency on-the-job training, special pathology seminars, and review studies in pathology for medical officers preparing for examinations by the specialty boards in pathology or other medical or surgical specialties. The practice of the Institute in sending out loan sets to those unable to come to the Institute for study, was approved by the Committee. These sets consisted of microslides with related data, clinico-pathological materials, duplicate gross specimens from the museum collections, lantern slides, photographs, filmstrips, and motion pictures when available.

In general, the Committee gave its approval to the organization and operations of the Institute, including plans for a broader scope of work in the eagerly awaited new building. It was the opinion of the Committee, however, that

the production of original motion pictures should be discontinued as soon as each of the Armed Forces had opportunity to provide for such services on its own account. The Committee felt, also, that "no useful end is served by requiring all pictures and films be sent to the AFIP" but did believe that "a central file of pictures and films of general educational value should be maintained at the AFIP." Accordingly, it recommended that the requirement of sending in all pictures and films should be limited to those of "general educational value."

In its closing remarks, the Cooney Committee recognized the Institute as a "unique institution" for consultation in pathology and for the investigation of disease, filling a "need both of military and civilian medicine." Because of the "better approach to medical care" inherent in its educational facilities and methods, the Committee said, "the Armed Forces Institute of Pathology has been called 'the Postgraduate School of Pathology' for the United States and even for the world."<sup>8</sup>

Maj. Gen. Silas B. Hays, the Deputy Surgeon General, concurred in the recommendations of the Cooney Committee, and agreed that the functions and level of operations set forth in the report were desirable. In the light of recent trends toward curtailment rather than expansion, however, he asked the advice of the Committee on the "functions to be performed and the level of operation" which should be sought under each of four assumptions—a continuation of support at the current level, and reductions of 10, 20, or 30 percent under that level.

The Committee accordingly reconvened and, on 26 March 1953, answered the general's inquiry. The "practice of pathology," it said, constituted more than 70 percent of the activities of the Institute and curtailment of this service would interfere with the development of the Institute as the central laboratory for the military services. Furthermore, the Committee said such portions of this work as were not done by the Institute would of necessity have to be done elsewhere by each of the Armed Forces, "or else the patient would suffer."

In the light of these considerations, and the further fact that the Institute was organized "to provide at the least cost possible a maximum of pathology," the Committee felt that this service "must be kept intact" and that whatever cuts might have to be made should be in the activities of the Institute which "might be considered as ancillary." Even if available funds should remain at the current 1953 level, the Committee said to "keep up with the normal increase of the pathology workload, there would have to be substantial curtailment of

<sup>8</sup> (1) "Study of Armed Forces Institute of Pathology." Report of the Cooney Committee to The Surgeon General, Department of the Army, 23 January 1953. (2) The characterization of the Institute as "The Postgraduate School of Pathology" was in an address by Dr. Robert A. Moore, Dean of the Washington University School of Medicine, at a Pathologists' Luncheon in Chicago, 16 October 1952.

other activities," while a cut of as much as 30 percent in funds and personnel would mean the abolishment of all services other than that of pathology consultation, and serious curtailment of even this remaining central feature of the work of the Institute.<sup>9</sup>

Fortunately, no such drastic cuts proved to be necessary, and the demands for consulting service in pathology did not go up to the extent anticipated. This was due, in part at least, to the more selective screening of cases in the histopathological centers, resulting in a reduced flow of pathological materials to the Institute. In 1952, the year before the Cooney Committee made its report, nearly 119,000 new cases were received, including the 29,000 cases from deactivated naval hospitals. With these figures before them, the Committee estimated a workload of 101,000 new cases in 1955, and 106,800 in 1960. Actual requirements in those years, as it turned out, were fewer than 63,000 new cases in 1955 and only slightly more than that figure in 1960.<sup>10</sup>

### *Atomic Bomb Research Unit*

These figures do not include the cases received by the Atomic Bomb Research Unit set up in 1948 under an arrangement with the Atomic Energy Commission by which the Army Institute of Pathology made its facilities available "for the filing and custodial care of pathologic material and related records of interest to the Atomic Energy Commission."<sup>11</sup>

The group assigned to this special work, known as the "A-Bomb Unit," was charged with processing "all pathologic material and case histories collected by the Atomic Bomb Casualty Commission in Japan in a fifty-year follow-up study of the victims of the atomic bomb and descendants of irradiated victims." The unit had received, by the end of 1954, specimens and case histories for 26,735 cases originating in Hiroshima and Nagasaki, in furtherance of its mission of assembling in one place in the United States the information pertaining to the effects of radiation on human beings. Included in this information are the early Japanese reportings of the overall effects of nuclear explosions, and over 200 translations of the Japanese scientific reports dealing with radioactivity, injury, hematology, and pathology. In addition to information from Japan,

<sup>9</sup> 2d indorsement, General Cooney, dated 27 March 1953, to The Surgeon General of the Army, 27 March 1953, subject: Study of the Missions and Functions of the AFIP. On file in historical records of AFIP.

<sup>10</sup> Annual Reports, Armed Forces Institute of Pathology, 1952, p. 5; 1955, p. 4; 1960, annex No. 3.

<sup>11</sup> Letter, Kenneth G. Royal, Secretary of the Army, to Carroll L. Wilson, General Manager, Atomic Energy Commission, 3 February 1948, in response to letter of 23 January 1948. Copy on file in historical records of AFIP.

the Radiation Unit of the Institute collects data, from the atomic and nuclear tests conducted in this country, for the Atomic Energy Commission.

The materials received from Japan have been found of use in a score of special researches, including studies by General DeCoursey and statistical analyses by Francis X. Lynch, supervisor of the unit, and Mardelle L. Clark, Chief of the Statistics Branch of the Institute.<sup>12</sup>

Before the studies could be undertaken, it was necessary to correlate the specimens and case histories with the named individuals from whom the specimens had been taken and to whom the histories applied—a painstaking procedure made more complicated by language differences and especially by unfamiliarity with the sound and the spelling of Japanese names which had to be transliterated into some sort of American equivalent for filing purposes.

Studies of radiation effects were not the only medical problem plagued by differences in language and medical nomenclature. Difficulties in diagnosis, made more difficult by the growing confusion in the naming of neoplastic diseases, led to the publication by the Institute of its "Atlas of Tumor Pathology," as a contribution to the broadly based efforts of health organizations to combat cancer. This project had its genesis in discussions at the Fourth International Congress for Cancer Research, meeting in St. Louis, Mo., in 1947, out of which there grew the suggestion that "renewed attempts be made to simplify and standardize the nomenclature of neoplastic diseases and to devise means toward aiding graduate and undergraduate teaching of oncology"—the medical term for the body of knowledge pertaining to tumors.

This suggestion led to the calling of a conference of specialists held in Washington under the joint auspices of the National Research Council and the Scientific Advisory Board of the Army Institute of Pathology, at which it was recommended that a subcommittee on oncology be set up by the National Research Council's Committee on Pathology, as part of the Committee's overall program. In November 1947, the subcommittee was formed with Dr. Shields Warren of Boston, Mass., as chairman; and Doctors Balduin Lucké of Philadelphia, Pa., Arthur Purdy Stout and Fred W. Stewart of New York, N.Y., Milton Winternitz of New Haven, Conn., and Harold Stewart of Bethesda, Md.,

<sup>12</sup> (1) Clark, Mardelle L., and Lynch, Francis X.: Clinical Symptoms of Radiation Sickness, Time to Onset and Duration of Symptoms Among Hiroshima Survivors in the Lethal and Medical Lethal Ranges of Radiation. *The Military Surgeon* 3: 360-368, November 1952. (2) Reynolds, Mardelle L., and Lynch, Francis X.: Atomic Bomb Injuries Among Survivors in Hiroshima. *Public Health Reports* 70: 261-270, March 1955. (3) DeCoursey, Elbert: Pathology of Ionizing Radiation. *Minnesota Medicine* 34: 313-318, April 1951. (4) DeCoursey, Elbert: Injury from Atomic Bombs. *Radiology* 56: 645-652, May 1951. (5) Annual Report, Armed Forces Institute of Pathology, 1950, p. 28.

as members; and Dr. Howard T. Karsner, Chairman of the Research Council's Committee on Pathology, as a member ex officio.

### *Atlas of Tumor Pathology*

This Subcommittee on Oncology was the moving force in the launching of a new "Atlas of Tumor Pathology" to be issued at the Institute of Pathology with the support and sponsorship of the American Cancer Society; the Anna Fuller Fund; the Jane Coffin Childs Memorial Fund for Medical Research; the Veterans' Administration; the National Cancer Institute of the Public Health Service; and the Armed Forces Institute of Pathology.

The first unit of the Atlas to be published recites, on the title page, that the publication was "prepared at" the Institute of Pathology under the auspices of the Subcommittee on Oncology. Subsequent units recite, on the title page, that they are "published by" the Institute, under the same auspices, and that they are for sale by the American Registry of Pathology of the Institute.

The Atlas, it was decided, was to give "preeminently a pictorial representation of the many structural variants which characterize the many kinds of neoplasms." Along with the illustrations, which were to be its outstanding feature, there were to be "adequate explanatory legends," as Dr. Lucké put it, in his introduction to the first of the 39 units or fascicles into which the proposed Atlas was to be divided.

Thirty-two distinguished pathologists accepted the invitation of the Subcommittee on Oncology to prepare the illustrative and text material on tumors of the various organs or anatomical regions which were to be dealt with in the several fascicles. In the preparation of these studies, the authors could draw not only from cases encountered in their own practice but also from cases on file in the American Registry of the Institute.

Indeed, the great facilities and resources of the Armed Forces Institute of Pathology were placed at the disposal of the Subcommittee and of the collaborators, authors of the fascicles, who served without recompense other than the satisfaction of having a part in the massive marshaling of the forces of light and understanding directed against the darkness and mystery surrounding the topic of tumors.

The spirit in which the task of publishing the Atlas was undertaken is well stated in a signed foreword printed with the first fascicle. "Only through a continuing coordinated effort of all doctors, civilian and government," the statement said, "can the available specialized knowledge be welded into an



FIGURE 101.—Samples of the fascicles.

effective resource for all pathologists and medical personnel. The Subcommittee on Oncology has brought together the experience of eminent doctors and the resources of the Armed Forces Institute of Pathology to produce this Atlas to aid in the definition and diagnosis of those diseases grouped together under the term 'cancer'.”<sup>13</sup>

The method of publication in separate units, or fascicles, has many advantages for such a project as the Atlas. The first of the fascicles appeared in 1949 (fig. 101). Twelve years later, in December 1961, seven units were still in various degrees of readiness for the press; 31½ fascicles have been issued and made available to the medical profession as they were readied for publication. The earliest chapters were edited by Dr. Isabella Perry, Executive Secretary of the Subcommittee on Oncology, who was succeeded in 1950 by Dr. Mary Ruth Oldt. Since 1958, Dr. Catherine W. Blumberg, professional associate of the National Academy of Sciences, National Research Council, has been editor of the “Atlas of Tumor Pathology.”

<sup>13</sup> Signers of the statement were: R. W. Bliss, The Surgeon General, Department of the Army; C. A. Swanson, The Surgeon General, Department of the Navy; Malcolm C. Grow, The Surgeon General, Department of the Air Force; Charles S. Cameron, Scientific Director, American Cancer Society; Lewis H. Weed, Chairman, Division of Medical Sciences, National Research Council; Leonard A. Scheele, The Surgeon General, U.S. Public Health Service; and Paul B. Magnuson, Medical Director, Veterans' Administration.

The first chairman of the Subcommittee, Dr. Shields Warren, resigned in 1951, to be succeeded by Dr. Lucké who, as chairman, performed the last of his many services to the Institute until his death in 1954, when Dr. Arthur Purdy Stout of the Institute of Cancer Research of Columbia University became chairman. Dr. Paul Steiner of the University of Pennsylvania and Dr. Lauren Ackerman of Washington University, a member of the International Committee on Oncological Nomenclature, were added to the membership of the committee before the move into the new building.

Acceptance of the Atlas has been worldwide, with from 12 to 25 percent of the distribution in foreign lands. The fascicles have met with hearty acclaim abroad as well as at home, although there was some feeling abroad that "perhaps not enough attention has been paid to the nomenclature and opinions of non-American pathologists," as Dr. Stout put it in an editorial article in the *American Journal of Clinical Pathology*.<sup>14</sup>

The degree of acceptance of the Atlas by the medical profession is indicated by the growing demand for the fascicles as they have appeared. The original print orders were for 5,000 copies of each, a figure which has been increased to 7,500 copies, then to 10,000, and now to 15,000 copies.

In 1949, the year in which the first fascicles appeared, the American Registry of Pathology was designated as the department of the Institute through which sales of the fascicles would be handled. Four years later, in October 1953, Dr. Hugh G. Grady (fig. 102), who had succeeded Col. James E. Ash as Scientific Director of the Registry in 1949, reported that the first four fascicles had been "completely sold out." This "tremendous sale," he added, "has been done with nothing resembling a sales organization or any worthwhile advertising."<sup>15</sup> In 1954, the last year in the old building, 17,623 copies of fascicles were sold, still without a sales organization in the usual sense, and still without advertising other than word-of-mouth reporting of the merits of the publications.<sup>16</sup>

The fascicles which were sold out have been reprinted, whenever it has been possible to do so without holding up the printing of those as yet unissued, and others which are now out of print will doubtless be reproduced as opportunity offers.

Another arm of the Institute which has a part in the enterprise of publishing the "Atlas of Tumor Pathology" is the Medical Illustration Service, which

<sup>14</sup> Stout, Arthur P.: Editorial. *American Journal of Clinical Pathology* 25: 175, 176, February 1955.

<sup>15</sup> Annual Report, Armed Forces Institute of Pathology, 1953, Exhibit 2, p. 7.

<sup>16</sup> Annual Report, Armed Forces Institute of Pathology, 1954, p. 20.

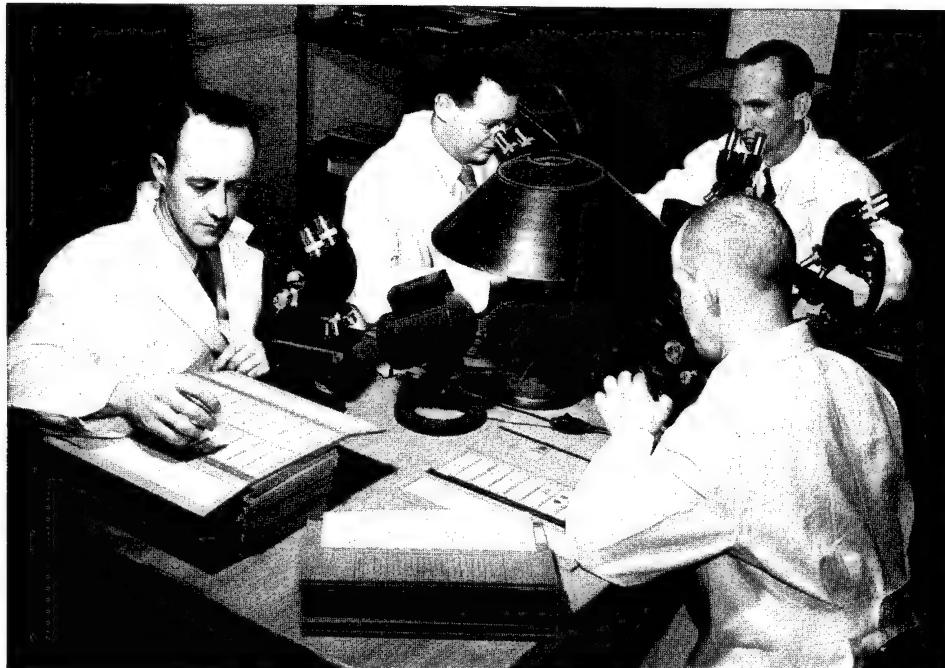


FIGURE 102.—This group is carrying out one of the three prime responsibilities of the Institute, diagnostic consultation, under the direction of Dr. Hugh G. Grady (upper right), Scientific Director, American Registry of Pathology, 1949-1957.

is responsible for the physical production of the fascicles. Because of the highly specialized character of the illustrations which are the distinguishing feature of the Atlas, the negatives used in offset printing are prepared in the Medical Illustration Service's plant, where the closest cooperation between the pathologist and the printer can be assured. Presswork, in the ticklish business of reproducing accurately the photomicrographs which are the heart of the fascicles, likewise can best be done in the Institute's own plant. For these and other reasons, the printing division of the Institute qualifies as an "approved field printing agency" under the standards and rulings of the congressional Joint Committee on Printing. When it came to setting type for the text of the fascicles, however, the situation was different. The type-setting equipment in the Institute's plant was antiquated and inadequate, "necessitating hours of hand setting" which delayed all other operations. Rather than attempting to set type with the equipment it had, arrangements were made to have this done by the U.S. Government Printing Office—an arrangement which is still in effect.<sup>17</sup>

<sup>17</sup>Annual Report, Armed Forces Institute of Pathology, 1948, p. 27.

### *The American Registry*

While both the American Registry and the Medical Illustration Service are integral parts of the Institute of Pathology, both have responsibilities that extend beyond the primary purposes of their parent organization. Thus, the several registries are so many links between the medical services of the Armed Forces and the civilian medical, dental, and veterinary professions. At the beginning of the last decade of the Institute's occupancy of the old building, there were 12 such links; at the time of the move into the new building, the number had grown to 22, each one with a registrar chosen from the Institute's staff of senior pathologists. The separate registries, each working with its own sponsoring organization in medical, dental, or veterinary specialties, are bound together in the American Registry of Pathology.

An important service of the American Registry to the medical profession, civil as well as military, is the circulation of histopathological study sets (fig. 103). These sets are especially appreciated by those who are preparing for examination by the certifying boards of the various organized medical, dental, and veterinary specialties. Before 1949, distribution of these study sets had been on a rental basis, with the fees paid to the National Research Council. This was changed, effective 1 January 1949, to a loan basis, with no charge other than paying the transportation both ways. When the Army Chief of Finance was approached with an inquiry as to the method of property accountability to be adopted under the new system, its legality was questioned. The Logistical Division of the Army General Staff, to whom the question was referred, ruled that the plan was "both authorized and desirable," and directed that the language of the pertinent Army Regulations No. 40-410 be amended so as to make it clear that "the Army Institute of Pathology may supply teaching material, such as sets of prepared microscopic slides to Army installations and qualified professional persons as approved by the Director."<sup>18</sup>

Approximately 50 different study sets, each one containing from 25 to 100 slides, accompanied by a syllabus and other materials, were kept in circulation, with no more than one set at a time loaned to a borrower. More than 10 sets a day were loaned in the last year of occupancy of the old building.<sup>19</sup>

The value of the work of the American Registry was further recognized by the action of the American College of Surgeons which, in July 1953, donated

<sup>18</sup>(1) Annual Report, Armed Forces Institute of Pathology, 1949, p. 10. (2) Army Regulations No. 40-410. (3) Department of the Army Circular Letter No. 1, 1949.

<sup>19</sup> Brochure, "AFIP: Armed Forces of Pathology," appendix III, 1952.



FIGURE 103.—A sample study kit.

to it the Codman Bone Sarcoma Registry—the first to be formed in the United States. The collection included 2,374 cases, with specimens and medical histories, on the basis of which much of what was known of the behavior and classification of bone tumors had been developed. The collection became part of the Registry of Musculo-Skeletal Pathology, but retained its name so as "to preserve the identity of the first such Registry created, and to honor Dr. Codman who first conceived the idea of a Registry and follow-ups as an essential feature of medical investigation." General DeCoursey, the Director, expressed the happiness of the Armed Forces Institute of Pathology at receiving "this historical and valuable collection."<sup>20</sup>

<sup>20</sup> Annual Report, Armed Forces Institute of Pathology, 1951, pp. ii, 23, 40.

### *The Medical Illustration Service*

In much the same way as the activities of the American Registry extended beyond the strictly military aspects of the Institute into fields of civilian medicine, so the Medical Illustration Service had responsibilities which were broader than the limits of the Institute. These responsibilities were placed on the Illustration Service by the Surgeon General's Office in August 1947, when "certain functions of The Surgeon General's Office pertaining to the preparation and coordination of all Medical Department exhibits were transferred to the Army Institute of Pathology," and all "Medical Department installations and individuals invited to prepare or desiring to prepare an exhibit for a medical meeting, convention or other similar gathering" were called upon to "coordinate the matter with the Director, Army Institute of Pathology, prior to taking any action on a given project." The purpose and effect of the order was to "improve the appearance of all exhibits [of Medical Department functions and activities], eliminate duplication and prevent the presentation of activities and materials not approved by The Surgeon General."<sup>21</sup>

In 1947, the first year in which this broader concept of the Institute's Medical Illustration Service was in effect, 25 exhibits were constructed and shown at a like number of meetings. In 1948, the number of exhibits built was 47, for showing at the same number of meetings. The number of exhibits built increased to 81 in 1954, the last year in the old building. In the same year, there were 267 showings of Medical Department exhibits at 121 meetings. In the 8 years ending with 1954, the Illustration Service of the Institute constructed 457 exhibits; attended 393 meetings at which exhibits were displayed; and showed its exhibits 1,217 times. Medals, awards, and official commendations received numbered 52.<sup>22</sup>

The first exhibit which expressed the triservice character of the Institute was one representing all United States hospital services (fig. 104)—Army, Navy, Air Force, Veterans' Administration, Public Health Service, and Bureau of Indian Affairs—shown at the 1951 annual meeting of the American Hospital Association in St. Louis, Mo.<sup>23</sup>

Illustrative of the way in which "mileage" was made by multiple showings of the exhibits, as well as the way in which the various departments of the

<sup>21</sup> (1) Circular Letter No. 127, Surgeon General's Office, U.S. Army, 8 October 1947. (2) Whitehurst, E. R.: The Evolution of the Armed Forces Institute of Pathology and Related Problems of Administration. *The Military Surgeon* 106: 302, April 1950.

<sup>22</sup> Compiled from Annual Reports, Armed Forces Institute of Pathology.

<sup>23</sup> Annual Report, Armed Forces Institute of Pathology, 1951, p. 57.



FIGURE 104.—President Harry S. Truman inspects an Institute exhibit on U.S. Government hospital services, shown at a meeting of the American Hospital Association.

Institute worked together, was the exhibit on malaria prepared by the staff of the Medical Museum in conjunction with Dr. Ernest Carroll Faust of New Orleans, La., consultant on tropical diseases, and constructed by the Illustration Service. This exhibit was shown at the 1952 annual meeting of the American Medical Association, where it received the Billings Silver Medal, and afterward was set up and shown at the American Public Health Association meeting in Cleveland, Ohio; at Tulane University in New Orleans, La., at the meeting of the American Society of Tropical Diseases at Galveston, Tex.; and was finally placed at Brooke General Hospital at Fort Sam Houston, Tex.<sup>24</sup>

Building and showing of medical exhibits, however, was but one phase of the activities of the Medical Illustration Service (fig. 105). Its "primary object" as stated by Maj. Carroll F. Naidorf, Chief of the Service for the greater

<sup>24</sup> Annual Report, Armed Forces Institute of Pathology, 1953, p. 54.

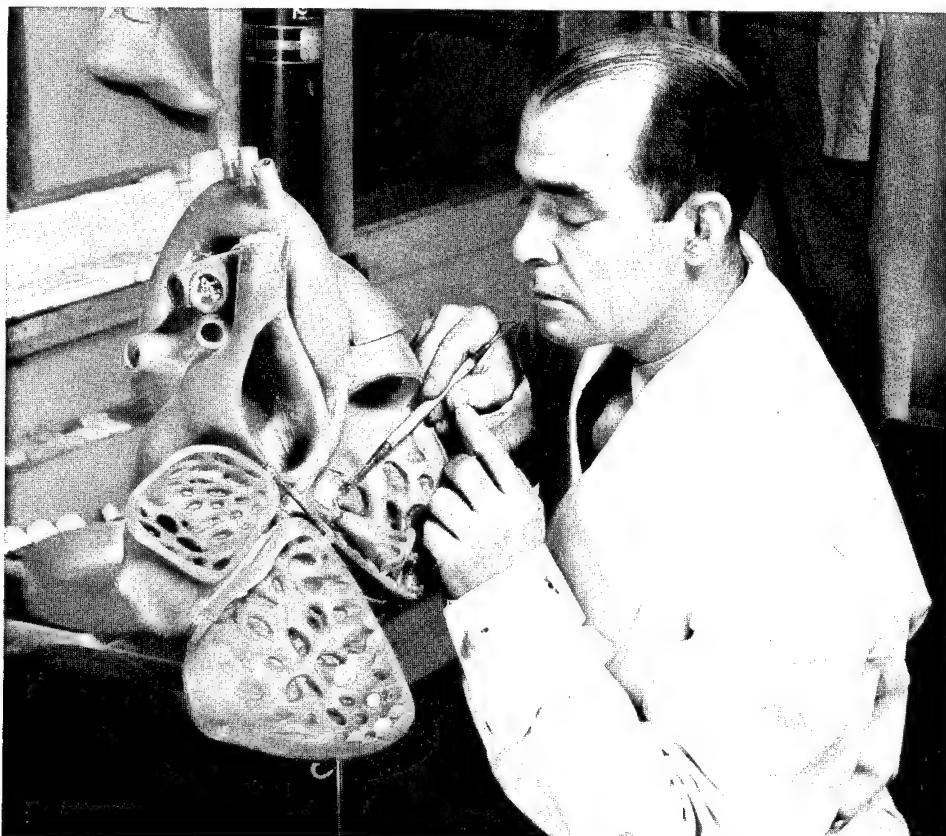


FIGURE 105.—Antonio Cortizas, Cuban-born medical sculptor, at work on a heart-lung model. Sergeant Cortizas, a master specialist, died in 1956.

part of the year 1946, was "to make documented medical pictures available for study, research, teaching and publication"—an assignment which, he added, "requires more than a passive acceptance and filing of inadequately documented pictures."<sup>25</sup>

Major Naidorf's successor as Chief of the Service was Dr. Edward M. Gunn, who had served in the Pacific in World War II, and was at the time of the reorganization of the department a civil service administrative employee of the Surgeon General's Office. Two years later, in 1949, Dr. Gunn described the reorganized Service as the "most complete and well balanced organization of its kind."

The organization thus described included Roy M. Reeve (fig. 106) as Deputy Chief of the Service and Herman Van Cott as Chief of the Scientific

<sup>25</sup> Final Report, Maj. Carroll F. Naidorf, 26 October 1946. On file in historical records of AFIP.



FIGURE 106.—Roy M. Reeve, who went to work for the Museum in 1917, and for 37 years was its official—and sometimes only—photographer.

Illustration Division. Joseph Carter was Chief of the Photography Division; Don Carlos Ellis, of the Audiovisual Aids Division; and Herbert C. Kluge, of the Illustration Library. In 1950, the Technical Duplication Branch and Photo-

stat Division was headed by Maj. Floyd C. Egger, and in 1951, a new General Service Division was formed with Lt. Cdr. G. T. Moss as Chief. In the spring of 1952, after 5 years of service, Dr. Gunn resigned to enter private industry, to be succeeded by Mr. Reeve as Acting Chief of the Department, with Mr. Van Cott as Deputy Chief. William E. Macy became Chief of Scientific Illustration. Later in the year, Commander Moss was relieved, due to a change of station, and was replaced by Joseph Q. Conroy. Joseph Carter retired and was succeeded by Julius Halsman as Chief of the Photography Division. The recently renamed Printing Division was headed by Walter Harders, in place of Major Egger, who was transferred.<sup>26</sup>

In March 1953, Don Carlos Ellis, Chief of the Training Aids Division, died from injuries received in an automobile accident and was succeeded by Morris Goldberg.

In December of the same year, Mr. Reeve retired, after 36 years of service, in which he had done much to enhance the position of the Museum-Institute as a leader in the field of medical photography, particularly in photomicrography. He was succeeded as head of the Medical Illustration Service by Herman Van Cott, a graduate in fine arts of Yale University and an artist of distinction in his own right.<sup>27</sup>

### *Rebirth of the Medical Museum*

During the last decade of the occupancy of the old brick building by the Institute, the Medical Museum—the mother which “had been overshadowed by its offspring”<sup>28</sup>—began a comeback from the low estate into which it had drifted during and just after World War II. Wartime demands for space had all but squeezed the Museum out of the main building. Museum materials, for which no room was available, had been stored and, as it turned out, not well and safely stored. Rehabilitation started when on 9 August 1946, Chase Hall, a temporary building put up during the war to house the SPARS—the Women’s Reserve Corps of the U.S. Coast Guard—was assigned to the Museum, which began to gather itself together again.

The small part of its collections which had remained in the main building were moved across the street, Independence Avenue, into the newly available space. Thither, also, the vans brought materials from storage space on Maine

<sup>26</sup> Annual Reports, Armed Forces Institute of Pathology, 1940, p. 40; 1950, pp. 33, 45; 1951, pp. 37, 45; 1952, pp. 44, 45.

<sup>27</sup> Annual Report, Armed Forces Institute of Pathology, 1953, pp. iii, 4.

<sup>28</sup> Annual Report, Armed Forces Institute of Pathology, 1947, p. 22.

Avenue in Washington, and from a warehouse on Columbia Pike in nearby Virginia.

A year after the occupation of Chase Hall, the Director reported that "the initial post-war stage of chaos with hundreds of boxes of items of unknown type, number, location or condition has given way to a stage of concentrated storage of items of generally known type, condition and location." For the Museum to get "started on its return to its rightful place as an unparalleled working body of scientific and historical medical data in the Western Hemisphere," he added, would require "time, patience, and persistent attention to innumerable details \* \* \* coupled with an adequate staff."<sup>29</sup>

At the end of another year, it was possible to report that reorganization of the Museum was completed for practical purposes with "transporting, cleaning, repairing, sorting, preliminary cataloguing, temporary storage, final cataloguing, cross referencing, indexing, filing, accessioning, wrapping, packing and final storing of over 126,000 museum items and the salvage or discard of damaged medical items and a great bulk of unrelated or distantly related material."<sup>30</sup>

Three years after the move into Chase Hall, the Director's report for 1950 noted that "the Museum proper has changed from a large vacant recreation hall and assorted smaller rooms to an organized exhibit area with over 300 displays which reflect broad medical interests of value to the public, junior medical officers and specialists."

Back of the transformation, there was devoted and intensive work by the Museum staff, headed by Dr. Ruell A. Sloan, whose outstanding service to the Museum-Institute was soon to end with his untimely death on 17 June 1951. Between 21 March 1947, when Dr. Sloan became Curator, and the submittal of the Annual Report for 1950, the staff had grown from "one physician and a few inexperienced enlisted men to a staff of 21," forming the nucleus of the professional, technical, and administrative personnel necessary to the basic operation of a comprehensive medical museum.<sup>31</sup>

The Pathology, Anatomy, and Embryology Division was headed by Dr. Henry W. Edmonds. A new Information Section was formed with Mrs. Evelyn Drayton as its Chief. The General Service Division, of which Miss Helen R. Purtle was Chief, had reviewed, physically inventoried, partially indexed, and filed over 250,000 museum items of widely assorted types. After storage of some and disposal of other items seriously damaged by hasty war

<sup>29</sup> Annual Report, Armed Forces Institute of Pathology, 1948, pp. 34, 35.

<sup>30</sup> Annual Report, Armed Forces Institute of Pathology, 1949, p. 61.

<sup>31</sup> Annual Report, Armed Forces Institute of Pathology, 1950, p. 57.

storage and "items useless to current and future development of the Museum" there remained nearly 80,000 items in the working collection.<sup>32</sup>

Upon the death of Dr. Sloan, Dr. Henry W. Edmonds served as Acting Curator until October 1952, when he resigned and was succeeded by Miss Purtle, also as Acting Curator, until the end of the year. At that time, Col. Hugh R. Gilmore, Jr., former Curator, returned to the Museum in the same capacity.<sup>33</sup>

He continued in that position until after the main body of the Institute had moved away, leaving the Museum in the renovated temporary quarters in which it was to be housed for more than a decade.

With all the attention paid to the auxiliary departments of the Institute, the fact remained that it was primarily an Institute of Pathology and that its primary purposes were consultation, education, and research in pathology. In line with this purpose, the members of the staff were active in the preparation and publication of scientific papers on medical topics—the term "medical" as used here and elsewhere in this work being broad enough to cover dental and veterinary subjects as well. In furtherance of such publication, an Editorial Branch was set up in 1951, with a membership which included the Director of the Institute, the Chief of the Pathology Division, five senior pathologists, the Chief of the Medical Illustration Service, and an editor, who acted as recorder for the Board. The Board was to review manuscripts prepared for publication by staff members of the Institute, and to edit the Institute's own publications.<sup>34</sup>

### *Research Programs*

With somewhat the same objective of seeing that limited facilities were put to the best use, a screening committee was set up to evaluate applications for research projects to be carried on at the Institute. Although the nature of the facilities in the old building limited the range of research to "morphologic and statistical aspects of disease" the committee processed 36 applications in 1952, the first year of its existence, and added 42 in the following year. With projects previously initiated and new projects approved, the total number underway in 1954, the last year in the old building, came to 150.<sup>35</sup>

<sup>32</sup> (1) Memorandum, Ruell A. Sloan, for Col. E. DeCoursey, 9 December 1950. (2) Annual Report, Armed Forces Institute of Pathology, 1950, p. 60.

<sup>33</sup> Annual Reports, Armed Forces Institute of Pathology, 1952, p. 53; 1953, p. 36.

<sup>34</sup> (1) Annual Reports, Armed Forces Institute of Pathology, 1949, p. 35; 1951, p. 41. (2) Special Orders No. 67, 11 July 1951.

<sup>35</sup> (1) AFIP, Special Orders No. 27, 20 March 1952. (2) Annual Reports, 1952, Exhibit 28, p. 35; 1953, p. 22; 1954, p. 3.

One project of direct and personal interest to the combat soldier and the medical officer had to do with the development of practical and effective body armor—a medicomilitary goal long sought. Much basic information about the behavior of bullets in wounds had been accumulated, particularly in the series of experiments conducted in 1935 by Col. George R. Callender and Maj. R. W. French of the Army Medical Museum staff.<sup>36</sup> More recent studies, made at the Naval Medical Field Research Laboratory at Camp Lejeune, N.C., led to the development of a sleeveless vest of laminated layers of synthetic fibers, covering the thorax and abdomen.

In June 1951, a joint Navy-Army mission, whose senior members were Cdr. John S. Cowan, MC, USN, and Lt. Col. Robert H. Holmes, MC, USA, was sent to Korea to see how effective this body armor would be under combat conditions. The vests were first issued to medical corpsmen and to troops of the 1st Marine Division and the 2d Infantry Division. Experience in 1951 and in 1952 showed that the 8-pound vests were not unduly cumbersome, and that three out of four hits by shell fragments failed to penetrate the vest and injure the soldier, while two out of three of all hits were likewise defeated by the armor. Such results "determined beyond doubt that the field soldier could wear, would wear, and desired to wear the body armor afforded him."<sup>37</sup>

Serving the four basic departments of the Institute in such vital particulars as supply and finance was the Administrative Service. In the last years of occupancy of the old building, this Service was headed by Lt. Col. E. R. Whitehurst, MSC, USA, from the time when the Institute took on its triservice character until 1950 and again from January 1952, until the new building was occupied. These chiefs of the Administrative Service were responsible to the directorate for the smooth operation of a complex organization. This organization, as described by Colonel Whitehurst, "really functions neither as a military nor a civilian installation, but endeavors to coordinate six different types of personnel, governed by the broad policies of the three Surgeons General and a civilian Scientific Advisory Board, and maintains close coordination not only with the

<sup>36</sup> Callender, G. R., and French, R. W.: Wound Ballistics: Studies in the Mechanism of Wound Production by Rifle Bullets. *The Military Surgeon* 77: 177-201, October 1935.

<sup>37</sup> (1) An analysis of the results of the mission to Korea was given in a paper entitled, "Wound Ballistics and Body Armor," by Lt. Col. Robert H. Holmes, MC, USA, read before the Section on Military Medicine at the 101st Annual Session of the American Medical Association, Chicago, on 11 June 1952, and published in the *Journal of the American Medical Association* 150: 73-78, 13 September 1952. (2) Additional information is given in: Holmes, Robert H., Enos, William F., and Beyer, James C.: Medical Aspects of Body Armor Used in Korea. *Journal of the American Medical Association* 155: 1477, 1478, 21 August 1954. The three men who prepared this article, from which the quoted sentence is taken, were all members of the AFIP. Colonel Holmes was awarded the Legion of Merit for his part in the study and analysis.

three uniformed services, but also with the Public Health Service, the Veterans' Administration, and the National Research Council.”<sup>38</sup>

### *Triservice Administration*

The first Director under the triservice arrangement was Brig. Gen. Raymond O. Dart, who was succeeded on 1 August 1950, by General DeCoursey, with Capt. Arthur W. Eaton, MC, USN, as a Deputy Director. Nearly a year later, in June 1951, the three-man directorate was completed when Col. Ralph M. Thompson, of the U.S. Air Force Medical Corps was named as the Deputy Director from the Air Force. On 15 February 1952, Capt. William M. Silliphant, MC, USN, was named Deputy Director, in the place of Captain Eaton. This triumvirate continued as the directorate of the Institute until mid-1955, after the move into the new building.

Preliminary to the move was a meeting called by Maj. Gen. Leonard D. Heaton, Commanding General of the Walter Reed Army Medical Center, for the purpose of clarifying the various logistical relationships between the Medical Center and its several components, and the newest member of the Center, the Armed Forces Institute of Pathology. The meeting, held on 11 August 1954, was attended by key staff personnel of the Medical Center, the Military District of Washington, the Office of The Surgeon General of the Army, and the Armed Forces Institute of Pathology.

In convening the meeting, General Heaton “made it plain at the onset that the AFIP is basically a tripartite organization—Army, Navy, and Air Force. It is a separate, distinct class 2 organization under administrative jurisdiction of The Surgeon General of the Army and under command of the Director. Although the AFIP will be physically located on the Post at Walter Reed, the only command responsibility that will be exercised by the Center will be of necessity in those areas of administration and logistical support, the responsibility for which has been laid down in SGO Administrative Letter 1-6. Insofar as those areas are concerned, the Director of AFIP will coordinate his activities with the Center Command.”<sup>39</sup>

General Heaton proposed that the various questions raised be taken up “item by item \* \* \* to assure that the proposed solutions are mutually agreeable to all of us.” His opening remarks set the tone of a friendly and fruitful meeting which dealt with practical questions as to matters of personnel, official orders, transportation and travel, protection and surety services, cus-

<sup>38</sup> Whitehurst, *The Military Surgeon*, 106 (1950), p. 309.

<sup>39</sup> Minutes of cited Meeting, 13 August 1954. On file in historical records of AFIP.



FIGURE 107.—Aerial view showing the location of the Institute building (upper left corner) in relation to the Walter Reed Army Medical Center.

todial and "housekeeping" services, supply, finance, records administration, postal service, civilian employees, commissary facilities, repairs and utilities, military training, and others of the thousand and one complications bound to arise in fitting the new member into the pattern of work and life at the Army Medical Center.

On 13 February 1955, the move from the old building to the new was started. Already, 5,000 items of new equipment had been purchased and placed in the new building. The move from the old building, carried out by General Service Administration forces, according to plans laid down by the Institute staff, was accomplished in a month, during which time 10,200 tagged items were moved to new quarters—40 vanloads, mostly specimens sealed in plastic bags going to outside storage at Franconia, Va., and 150 vanloads going to the long sought and eagerly awaited new building on the Walter Reed reservation (fig. 107).<sup>40</sup>

<sup>40</sup> Annual Report, Armed Forces Institute of Pathology, 1955, p. 79.

## CHAPTER XVII

# Life in the New Building

Occupancy of the new building made it possible, for the first time, said Brig. Gen. Elbert DeCoursey, to formulate and carry through "a comprehensive program of pathology"<sup>1</sup>—which the Institute lost no time in undertaking.

The first step in this new program was to complete the organization and staffing of the Department of Pathology, which previously had been limited to the Pathology Division. Under the new organization, effective in March 1955, this division was joined by the Basic Laboratories Division and the Dynamic Pathology Division, to make up the new department.<sup>2</sup>

To head the expanded department, the Institute secured Dr. Ernest W. Goodpasture (fig. 108), professor of pathology at Vanderbilt University, who joined the staff as the first Scientific Director of the Institute on 1 July 1955, and forthwith "engaged in planning the professional program so as to take full advantage of the facilities of the new laboratories."<sup>3</sup>

The new Scientific Director was one of pathology's greats. A native Tennessean, he had taken his academic work at Vanderbilt, and had graduated in medicine from the Johns Hopkins University School of Medicine. He had taught at Hopkins and Harvard; had served on the faculty of the School of Medicine of the University of the Philippines; had studied in Vienna; and had returned to Vanderbilt where, for 31 years, he had been professor of pathology, and for 5 years, dean of the Medical School.

In May 1931, Dr. Goodpasture and his associate, Dr. Alice Miles Woodruff, published a report on the results of 3 years of research and experiment in the inoculation of chick embryos with a virus, inserted through a tiny window in the shell of an unhatched egg. The virus was that of fowlpox, a poultry disease commonly called "sorehead." The tiny droplet of virus grew and multiplied, producing abundantly the pure and uncontaminated virus from which a protective vaccine could be derived. Such a virus, the report suggested, should be "valuable in immunological experiments."

<sup>1</sup> DeCoursey, Elbert: Editorial. *American Journal of Clinical Pathology* 25: 554-555, May 1955.

<sup>2</sup> Annual Report, Armed Forces Institute of Pathology, 1955, p. 3.

<sup>3</sup> *Idem*.



FIGURE 108.—Dr. Ernest W. Goodpasture, first Scientific Director, Armed Forces Institute of Pathology, 1955-1959.

The Goodpasture-Woodruff team had done more than to suggest further interesting experiments. They had found in the incubating egg a living tissue on which a virus would feed and from which it could not be contaminated, and had opened the way to the production of vaccines quickly, inexpensively, safely,

and in quantity. The methods devised, it was thought, "might prove advantageous in the study and development" of other virus infections.<sup>4</sup>

As further researches did indeed determine that other viruses could be produced by the impregnated egg method, Dr. Goodpasture's successful experiment with fowlpox began to be recognized for what it meant—a revolution in one vast field of immunology and preventive medicine through the production and use of pure, plentiful, and potent vaccines derived from the incubated egg.

Appointment of Dr. Goodpasture as Scientific Director of the Institute and head of its major Department of Pathology was not the only change in the organization and staffing that took place in the Institute's "shakedown cruise," as Capt. William M. Silliphant (fig. 109), in naval vernacular, termed the first few months in the new building. The captain, who had served as the Navy-nominated Deputy Director for 3½ years, succeeded General DeCoursey as Director in July 1955, when the latter left the Institute, after 5 years of service, to become Commandant of the Army Medical Service School at Brooke Army Medical Center, Fort Sam Houston, Tex.

Captain Silliphant, the new Director, a native of Prince Edward Island, Canada, was graduated with honors from Prince of Wales College at Charlottetown, Prince Edward Island, and afterward was graduated cum laude from the University of Southern California. He obtained his medical degree from the Stanford University School of Medicine, and had 2 years' postgraduate study in pathology at the U.S. Naval Medical School in Washington. He was captured by the Japanese in the Philippines and for 37 months was interned in Bilibid Prison, where he served his fellow prisoners as ward medical officer, sanitation officer, and laboratory officer, simultaneously. For 5 years before his assignment to the Institute as Deputy Director, he was Director of Laboratories, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Md.

In August, Col. Dwight M. Kuhns, MC, USA, became Deputy Director, serving to the end of the year 1955, when he retired for physical disability, and was succeeded by Col. Francis E. Council as the Army-nominated Deputy Director.

Meanwhile, Col. Ralph H. Thompson, the Air Force-nominated Deputy Director, retired at the end of August, and was succeeded by Col. Frank M. Townsend, USAF, MC.

Adjustment of personnel, space, and activities, to take full advantage of the new building and its facilities, went forward in the latter months of 1955 and in

<sup>4</sup> Woodruff, A. M., and Goodpasture, E. W.: The Susceptibility of the Chorio-Allantoic Membrane of Chick Embryos to Infection With the Fowl-pox Virus. *American Journal of Pathology* 7: 209-222, May 1931.



FIGURE 109.—Capt. (later Rear Adm., Ret.) William M. Silliphant, MC, USN, third Director, Armed Forces Institute of Pathology, 1955-1959.

1956, the first full year in the new quarters, under the direction of this triumvirate.

In April 1957, Colonel Council retired, to be succeeded by Col. Joe M. Blumberg, MC, USA, as Deputy Director (fig. 110). Colonel Blumberg, a

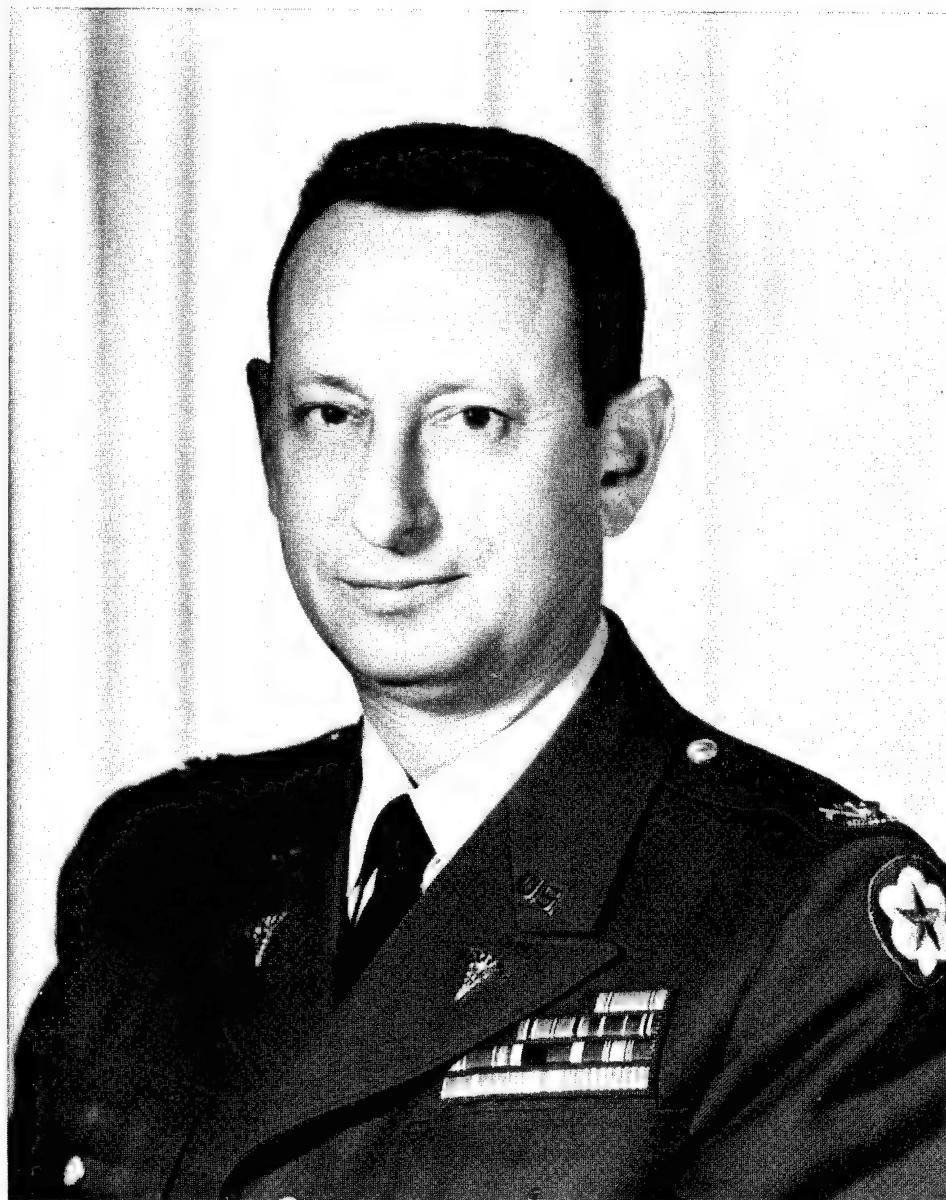


FIGURE 110.—Col. Joe M. Blumberg, MC, USA, Deputy Director, 1957-1963, and Director, Armed Forces Institute of Pathology, 1963- ; Scientific Director, American Registry of Pathology, 1960- .

Georgian, is a medical graduate of Emory University in Atlanta, and has served as chief of pathology and commanding officer of Army laboratories, including the 406th Medical General Laboratory in Japan.



FIGURE 111.—Capt. Roger H. Fuller, MC, USN, Deputy Director, Armed Forces Institute of Pathology, 1959-1963.

The directorate remained unchanged for more than 2 years until, in August 1959, Captain Silliphant retired and joined the staff of the Cancer Research Institute of the University of California Medical Center in San Francisco. His successor as the representative of the Navy on the directorate was Capt. Roger H. Fuller, MC, USN (fig. 111), who had taken his academic training at Yale and his medical degree at Tufts, and who came to the Institute from the post of Chief of Laboratory Service at the Naval Hospital, Camp Pendleton, Calif.

Succeeding Captain Silliphant as the Director of the Institute was Col. Frank M. Townsend, USAF, MC (fig. 112). The new Director had been, since 1954, the Consultant in Pathology to the Surgeon General of the Air Force, and a Deputy Director of the Institute for 4 years. A Texan by birth and rearing, he had done his premedical work at San Antonio College and the Univer-

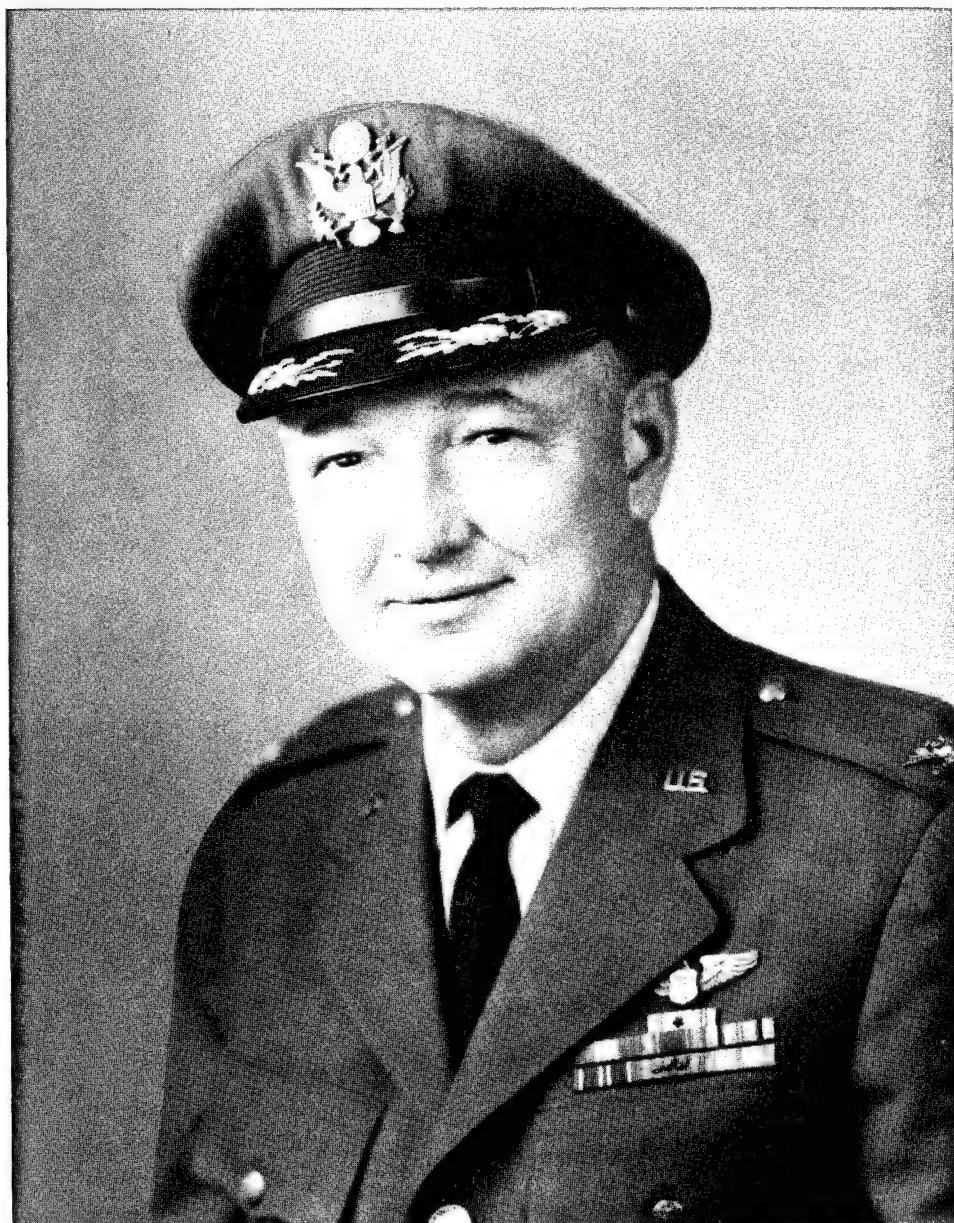


FIGURE 112.—Col. Frank M. Townsend, USAF, MC, fourth Director, Armed Forces Institute of Pathology, 1959-1963.

sity of Texas, and had taken his M.D. degree at Tulane University. He has served on the medical faculties of three universities—Washington University, St. Louis, Mo.; Nebraska University, Omaha; Texas University, Austin—and

has been especially active in the newly developing field of aviation pathology, and the even newer field of bioastronautics.

Two months earlier, in June 1959, Dr. Goodpasture had resigned as Scientific Director of the Institute, and returned to Tennessee. His successor was Dr. Robert E. Stowell (fig. 113), one of the Nation's leaders in pathology, who came to the Institute from the University of Kansas Medical Center, Kansas City, Kans., where he had been, for 11 years, professor and chairman of the Department of Pathology and Oncology, and director of Cancer Research.

Through all changes in the directorate and professional staff, in the new building, as in the old, there was no change in the fundamental mission of the Institute to serve the needs of pathology through consultation, education, and research. Within the first year of occupancy of the building, space problems arose, and it became "apparent that the cut made in the original plans was a doubtful economy." In other respects, however, the new building and its equipment proved to be satisfactory, and the Institute staff expressed appreciation "to all those responsible for its planning and equipment." Special appreciation was expressed to those who had secured congressional approval of the new plant, and also the commanding general at Walter Reed Army Medical Center and his staff. "Everything possible has been done to welcome the AFIP as a part of the Center and to extend to the AFIP all the services available," the Director said, in his 1955 annual report.<sup>5</sup>

### *Shortage of Space*

Not even the most cordial cooperation from Walter Reed Army Medical Center, however, could relieve a space problem that became apparent as the Institute settled into its new quarters. The problem that "engrossed the attention of the Directorate" was to find room for essential facilities for expanding professional studies, storage space for the ever-increasing flood of specimens, and space to store exhibits between the times when they were shown in public. To meet such needs, plans for a wing of some 103,000 square feet were prepared for inclusion in the Army Medical Services budget for fiscal year 1958, but such plans did not meet with favor in the processes of budget making and approval.<sup>6</sup>

One consequence of the space shortage at the main building of the Institute is the maintenance of warehouse space at Franconia, Va., where a large part of the more than one million specimens in the Institute's collection is stored.

<sup>5</sup> Annual Report, Armed Forces Institute of Pathology, 1955, pp. 3, 5, 6.

<sup>6</sup> *Ibid.*, pp. 53, 54.

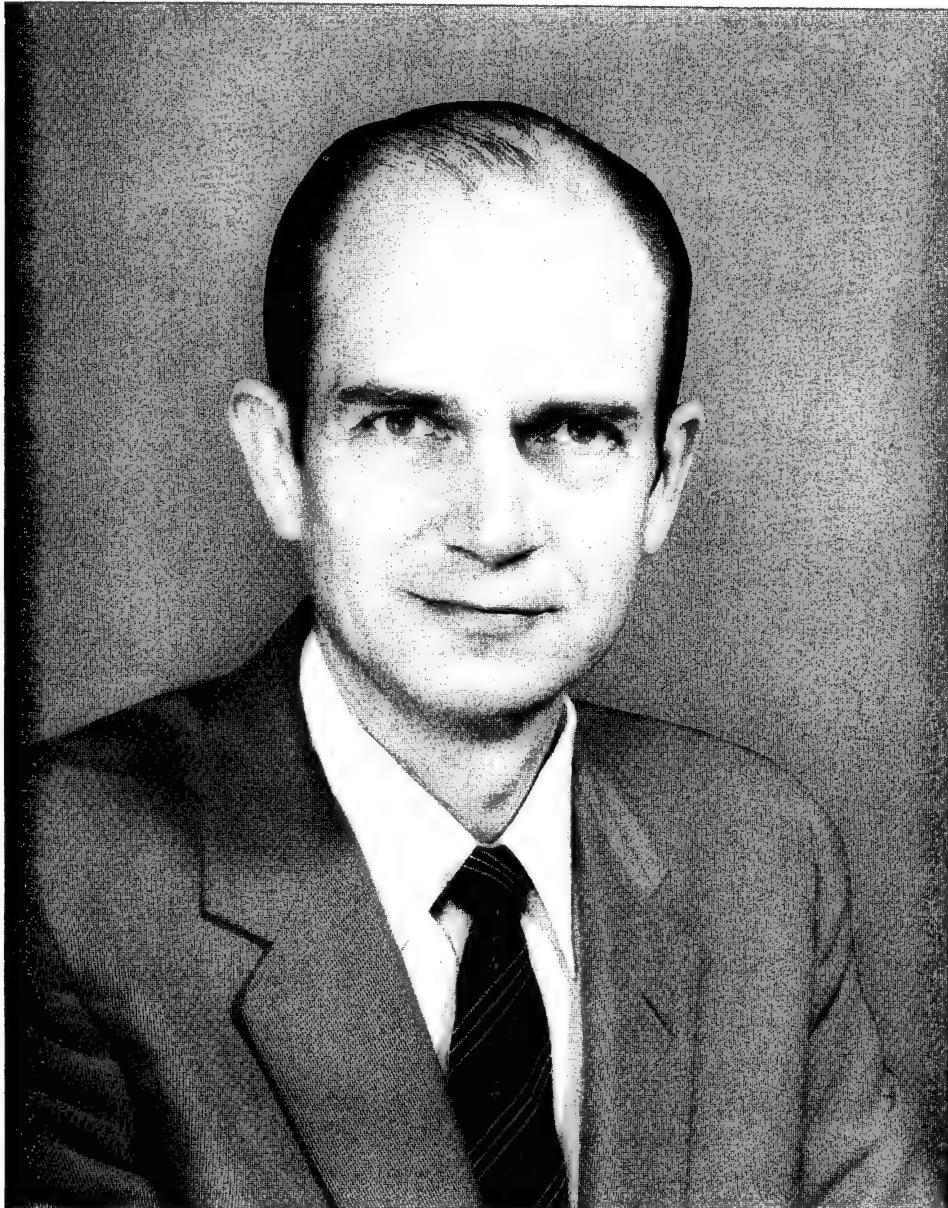


FIGURE 113.—Dr. Robert E. Stowell, second Scientific Director, Armed Forces Institute of Pathology, 1959- .

Storage of wet-tissue specimens in 20-gallon crock jars has been largely superseded by storage in sealed plastic bags, containing a small amount of formalin (fig. 114). The plastic bags offer many advantages in saving of space, ease of handling, and freedom from formalin fumes. By April 1959, storage of speci-



FIGURE 114.—Specimens in storage and on display. A. Large crock jars for storage of specimens are being replaced by plastic bags.

mens in the main building had been converted to plastic bags, and work was well started on conversion of the storage at Franconia. The difficulties inherent in the 25 miles between the place of storage and the place of use were such that in the spring of 1960 a study was started looking to the possibility of finding space at or near Walter Reed Army Medical Center. Maj. Charles B. Broadway, Chief of the Professional Records Division, who played a large part in the development of the plastic bag technique, represented the Institute in a careful but fruitless search, and the 50-mile round trip continues to handicap the work of the Institute, and particularly that of the Department of Pathology.<sup>7</sup>

### *Expanded Facilities and Services*

The expansion of professional services with consequent changes in the organizational structure of the Institute emphasized the fact that through all

<sup>7</sup> Annual Reports, Armed Forces Institute of Pathology, 1955, p. 3; 1959, pp. 34, 36; 1960, p. 14.

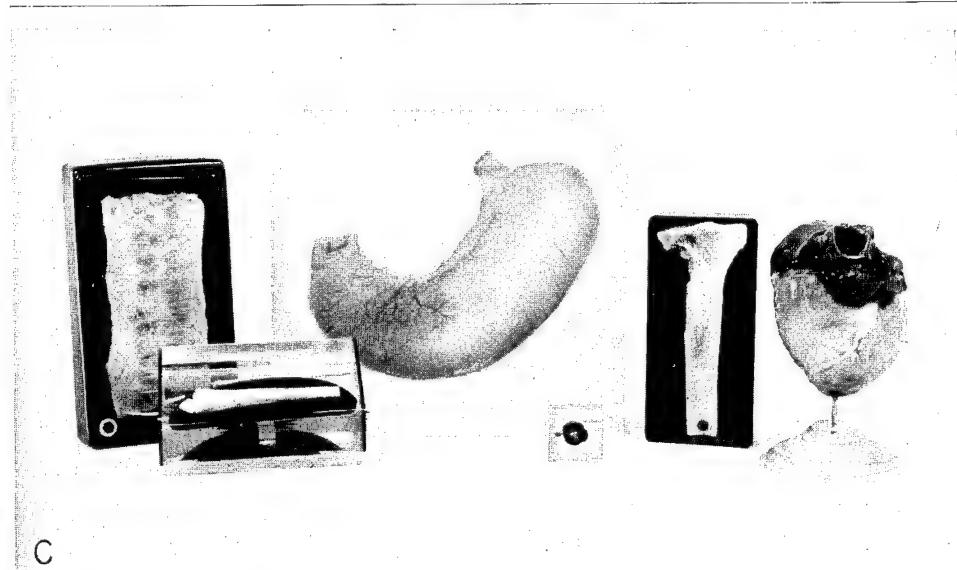


FIGURE 114.—Continued. B. Sealed plastic bags for storage of specimens require less space and preservative fluid and are handled more conveniently. C. Wet specimens on display embedded or enclosed in unbreakable plastic (compare fig. 28, p. 64).

changes it continued to be primarily an Institute of Pathology, with the heart and core of its operation in the Department of Pathology, which numbered on its staff some two-thirds of the entire professional staff of the Institute, and accounted for a like proportion of expenditures. To head the pathology services within the Department, Dr. Elson B. Helwig (fig. 115) was named as Chief, Division of Pathology, a post in which he was to serve under Scientific Directors Goodpasture and Stowell. The new division chief is an academic and medical graduate of Indiana University, with experience in pathology services at Western Reserve University, the New England Deaconess Hospital, the Washington University School of Medicine, and the Army of the United States.

The expanded and improved research facilities of the Institute were found to be of use not only in projects of immediate interest to the Institute itself, but also in projects of value to other agencies of government and to voluntary health organizations. One of the earliest of the numerous projects which the Institute has undertaken for other organizations on a cooperative or cosponsorship basis had to do with the sterilization of foods by irradiation. As part of this project of the Research and Development Command of the Department of the Army, the Institute undertook to furnish guidance to the study of the effects of feeding animals with irradiated foods, in an extensive program carried out in several laboratories. The Institute's services included receipt and review of all microscopic material and pathological reports, providing a central repository for all such materials, and preparing and analyzing statistical data as to pathological lesions found in animals that had been on irradiated diets for 2 years or more.<sup>8</sup>

In addition to the evaluation of pathological findings in animals fed on food sterilized by irradiation, and other projects receiving special support from such military organizations as the Research and Development Command of the Office of The Surgeon General of the Army, the Institute received financial support outside its regular budget for carrying on studies and investigations from non-military organizations, such as the American Cancer Society, the Alfred P. Sloan Foundation, the Squibb Laboratory, and the National Institutes of Health. By 1960, additional supplements to the Institute budget, derived from direct contracts and subcontracts with other Federal agencies and from grants from voluntary health organizations, totaled \$351,930. Of this sum, approximately 60 percent went for basic research, with the balance of 40 percent approximately equally divided between investigations of direct military interest and applied studies in human and veterinary pathology. By the end of 1960, the developing research program of Dr. Stowell, the Scientific Director of the Institute, had

<sup>8</sup> Annual Reports, Armed Forces Institute of Pathology, 1955, p. 15; 1956, p. 22; 1957, pp. 28, 65.



FIGURE 115.—Dr. Elson B. Helwig, Chief, Department of Pathology, Armed Forces Institute of Pathology.

resulted in research support from outside sources, nongovernmental as well as governmental, amounting to more than \$700,000, or double the amount of outside support the year before.<sup>9</sup>

The Institute's program of research covered not only the descriptive morphological and statistical investigations to which research had been largely confined in the old building, but also included projects that were made possible for the first time by the facilities afforded by the new building. In the more than 200 investigations carried out in the first 5 years of occupancy of the new building, there were studies of the biological and biochemical effects of microwaves; the response of cells to acute radiation; the neuropathology of nuclear and cosmic radiation; the structure and functions of various tissues; the effects of toxic agents upon various organs; the performance of motor end-plates where motor nerves join muscle fibers; and studies in leprosy and a variety of tumors.

Much of the enlarged scope of the Institute's program was made possible by advances in the instruments available and their application to research programs. The use of the electron microscope (fig. 116) with its magnifying power on the order of 250,000 diameters enabled the observer to "see" into the interior cellular structure farther than man had seen before with the optical microscope. With such instrumentation and methodology, the pathology of diseases could be "traced beyond the cell to the intracellular and molecular level," as the Director of the Institute put it.<sup>10</sup>

One of the vital areas of research which the new building opened up was in experimental pathology, using laboratory animals. In the first year of occupancy of the new building, the Laboratory Animals Branch of the Department of Pathology was set up, with the dual mission of looking after the housing, diet, and health of the animal population maintained within the Institute, and of providing facilities, assistance, and consultation to the staff on matters pertaining to experimental surgery. The population of the animal quarters at the end of 1955 exceeded 3,000. Of these, 1,900 were mice, nearly 400 were rats, more than 600 were guinea pigs, and nearly 300 were rabbits. Dogs numbered 8, swine 16, and cats 24. The average number of animals maintained in the 12 months of 1961 was 2,800 per month. The total number of animals issued during the entire year was over 14,000, of which more than 13,000 were mice, hamsters, and rats, and more than 600 were rabbits and guinea pigs.<sup>11</sup> The Veterinary Pathology Division, responsible for these functions, as well as for studies in

<sup>9</sup> Townsend, Frank M.: The Armed Forces Institute of Pathology. U.S. Air Force Medical Digest, July 1960.

<sup>10</sup> *Idem.*

<sup>11</sup> Annual Reports, Armed Forces Institute of Pathology, 1955, p. 21; 1961, p. 168.

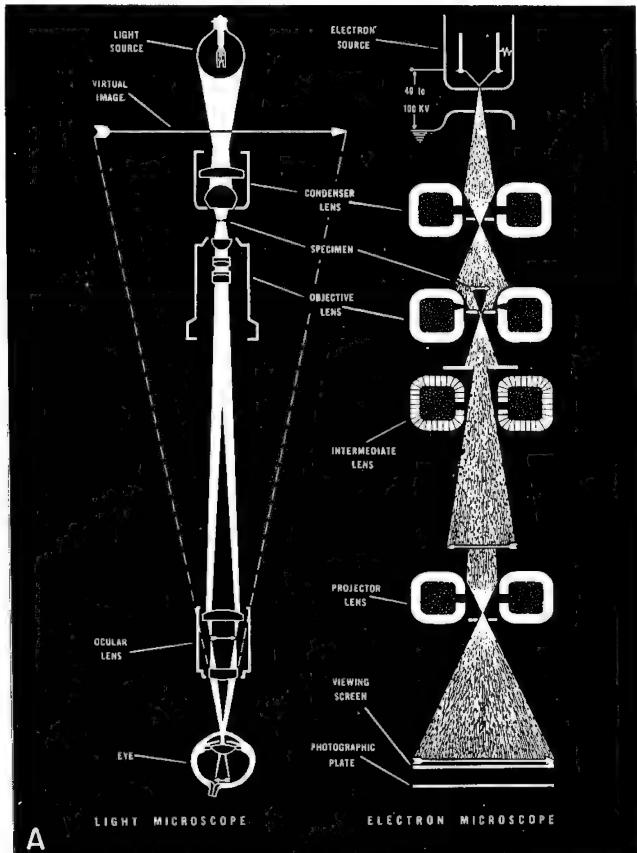


FIGURE 116.—Optical and electron microscopes. A. How they work.

comparative anatomy and physiology, included in 1960 eleven doctors of veterinary medicine, perhaps the largest aggregation of veterinary pathologists in the United States. This section of the Institute has for many years performed autopsies in the National Zoological Park of the Smithsonian Institution, in the course of which Institute veterinarians have performed or attended necropsies on a variety of animals ranging from an elephant to a 20-foot python.<sup>12</sup>

### *Program of Education*

Closely related to the research function of the Institute is its program of education, both within and without the confines of the Institute itself (fig. 117).

<sup>12</sup> (1) Annual Report, Armed Forces Institute of Pathology, 1961, p. 24. (2) Townsend, *U.S. Air Force Medical Digest* (1960).

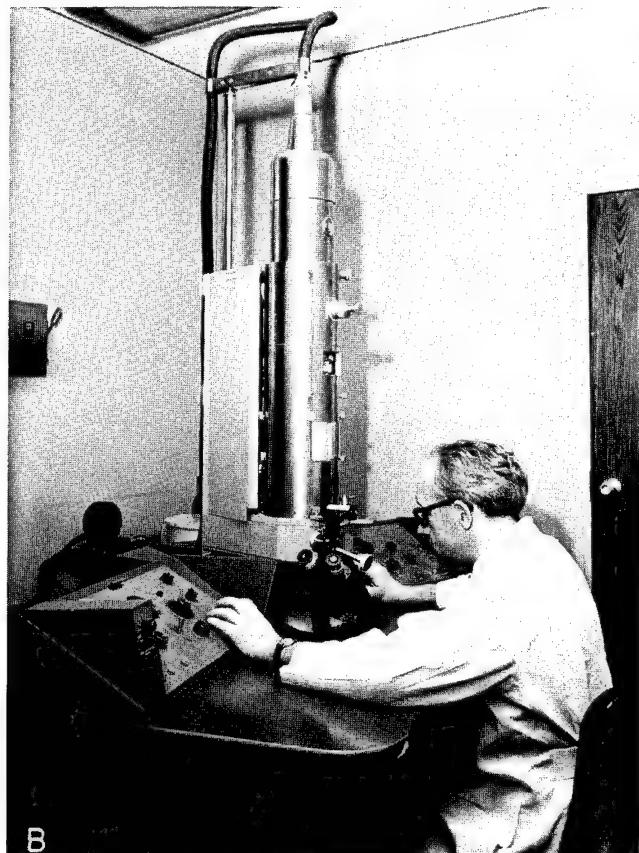


FIGURE 116.—Continued. B. Electron microscope in use.

The effort is restricted only by the limitations on the physical space and staff time that can be devoted to it. The program includes postgraduate short courses, individual training on a residency or fellowship basis, lectures to and by members of the staff, seminars for the consideration and discussion of pathology topics, active-duty training for Reserve officers, and related intramural activities. Extramural activities include publication of professional scientific papers in biological and medical journals, attendance at and participation in meetings of scientific societies, and the preparation and distribution of study sets on a loan basis.

These services are in no manner restricted to the medical profession in the United States but include nationals of foreign countries who are welcomed to the Institute. The extent to which these foreign nationals seek the educational opportunities offered by the Institute may be gaged by the fact that in the first

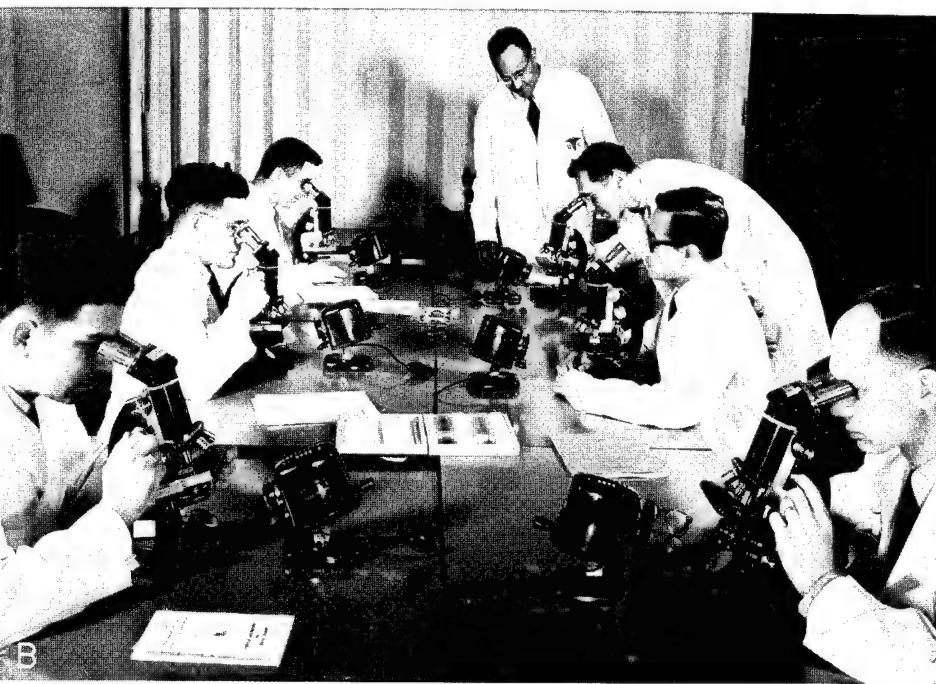


FIGURE 117.—Educational sessions. A. Lectures are conducted for and by members of the Institute staff. B. Opportunity afforded for more intensive study by smaller groups.

6 years in the new building, nearly 1,000 foreign nationals from over 40 countries attended courses or received training at the Institute.<sup>13</sup>

So great is the interest in the Institute's intramural educational program that the number of "student days"—a method of measurement that reflects both the number of students attending and the length of time attended—increased from 6,000 in 1958, to more than 27,000 in 1961.

"Because of the demands upon the professional time of the staff, space and support personnel," the 1960 annual report said, "the educational program appears to have reached the saturation point within the present Institute capabilities."<sup>14</sup>

A major feature of the extramural educational effort of the Institute continues to be lending study sets for the use of physicians both within and without the ranks of the Armed Forces. The growing demand for these loan sets for study purposes called for making up new sets, increasing the number and variety of those offered, and repairing old and wornout sets, even though this meant that an "inordinate amount of time and effort" had to be spent in this activity. The demands for the sets was so great, however, and their use was so much appreciated, that it was deemed impossible to reduce their circulation of approximately 5,000 sets a year.<sup>15</sup>

The outreach of the Institute is further strengthened by its active program of encouraging the utilization of its research riches in the preparation and publication of articles for publication in the scientific press. There are few fields of scientific investigation so prolific in publication as are the medical, dental, and veterinary disciplines, and few institutions of scientific investigation have been so active in the dissemination of research findings as the Armed Forces Institute of Pathology. This applies both to work done by members of the staff and also by others who have been associated directly or indirectly with the Institute.

The result has been a program of publications noteworthy in quality and volume. In 1949, the year the Institute became representative of the three armed services, publications numbered 29. In 1955, the year the new building was occupied, the number of articles published was 35. Forty-one articles appeared in 1956, and 43 in 1957. In 1958, publication reached a new high of 77 items, with 76 in the next year, 82 in 1960, and 91 in 1961. The sharp increase, it will be noted, did not come about until the third year in the new building, reflecting the time lapse involved in the process of research, writing, and edi-

<sup>13</sup> Annual Reports, Armed Forces Institute of Pathology, 1955-1960, *passim*.

<sup>14</sup> Annual Report, Armed Forces Institute of Pathology, 1960, p. 18, annex 2.

<sup>15</sup> Annual Report, Armed Forces Institute of Pathology, 1958, p. 30.

Editorial processing of scientific articles for publication in the numerous learned journals that make up the medical press.<sup>16</sup>

The noteworthy increases in the research and educational output of the Institute following the move into the new building were not achieved at the expense of the Institute's functions of diagnosis and consultation. True, the number of cases received did not materially increase between 1954, when 75,000 cases came into the old building, and 1958, when the number received in the new quarters reached its high point of 76,000, and actually it declined to 54,000 in 1959; 60,000 in 1960; and 57,000 in 1961. The declines were largely due to the effect of budgetary limitations on the Veterans' Administration, which caused a reduction in the number of cases from that source, and also to a trend to refer to the Institute, for consultative services, only the more difficult cases, thereby requiring that more time be spent by the pathologist on the average case. "The corresponding supportive help and reports were becoming still more specialized than in the previous years," said the annual report for 1960. "Numerous instances were recorded during the year whereby the findings of our staff influenced an alteration in the course of therapy."<sup>17</sup>

Cases received by the Radiation Injury Branch, more familiarly known as the A-Bomb Unit, constitute a special category. The number of these cases sent from Japan by the Atomic Bomb Casualty Commission laboratories at Hiroshima and Nagasaki in the years 1955-1961 exceeded 27,000, virtually the same number that had been received in the preceding 7 years since 1948. The Institute in Washington thus has become the repository for surgical and post mortem specimens of materials from more than 54,000 persons who were exposed to the blast of the first atomic bombs. The function of storage alone, however, does not give a proper picture of the Institute's participation in the scientific analysis and utilization of these materials (fig. 118).

In furtherance of its functions of education, research, and consultation, whether for immediate application or for future study and evaluation, the resources of the Institute are available for study by qualified investigators. These resources, in addition to the 54,000 specimens, include the largest collection in this country of early Japanese reporting of the overall effects of nuclear explosions, along with more than 200 translations of Japanese scientific reports dealing with radioactive injury, hematology, and pathology.

From years of experience in the management of large collections of the raw materials of pathology, the Institute has developed methods for their

<sup>16</sup> Annual Reports, Armed Forces Institute of Pathology, 1958-1960, *passim*.

<sup>17</sup> Annual Report, Armed Forces Institute of Pathology, 1960, p. 17.

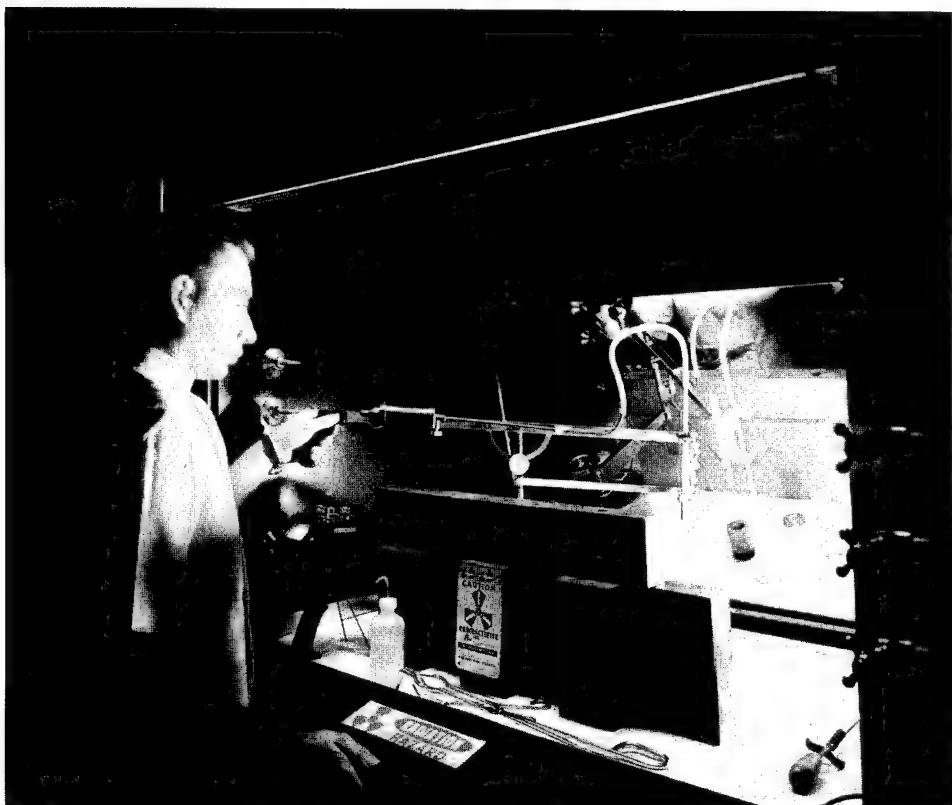


FIGURE 118.—Handling radioactive materials.

utilization in study and investigation. In keeping with these concepts, the collection of materials from Japan has supplied much of the fundamental facts for studies of the effects of radiation, some of which have been published with Japanese and American text in parallel columns.<sup>18</sup>

### *The American Registry of Pathology*

Closely related to the Department of Pathology in the structure of the Institute is the American Registry of Pathology. The association of the two departments is all the more intimate by reason of the fact that the registrars of the individual registries that make up the American Registry of Pathology are senior pathologists who also head up the specific branches and sections of the Department of Pathology. At the time of the occupancy of the new building in 1955, there were 22 individual registries, with a total of 119,000 cases in their

<sup>18</sup> Memoranda in files, Radiation Injury Section, AFIP.

files. By 1962, the number of registries had grown to 27 and the number of cases in the files to more than 200,000.

The American Registry is an important arm of the Institute in its research and education functions. Several of the sponsoring medical specialty societies provide fellowships at the Institute for study in such fields as radiology, urology, dermatology, ophthalmology, otolaryngology, and veterinary pathology, while other fellowships are supported by private funds, foundations, or institutions. In addition to these sponsored fellowships, physicians of the military services, including those of the Reserve components and civilian doctors, avail themselves of the facilities of the Registry, particularly in lines of investigation requiring followup activity.

The Registry continues to act as sales agent for the fascicles of the "Atlas of Tumor Pathology," with sales running up to as many as 40,000 copies in a year. Of these sales, approximately one-fourth are made outside the United States, going directly to physicians in 55 countries.

Dr. Hugh G. Grady, who had served as Scientific Director of the American Registry of Pathology since 1949, resigned in mid-1957 to become the first professor and organizer of the Department of Pathology in the newly founded Seton Hall College of Medicine and Dentistry at Jersey City, N.J. He was succeeded by Dr. Fathollah K. Mostofi. After 2 years of service, Dr. Mostofi resigned this administrative post but continued to serve as registrar of the Genitourinary Pathology Registry.

He was succeeded as Scientific Director for the Registry by Colonel Blumberg, who combined the duties of this post with those of Deputy Director of the Institute. As Scientific Director of the Registry, he turned his particular attention to the increase in financial support from sources outside the Institute, so that the educational and research potentialities of the Registry, with its intimate association with civilian medicine, might be more fully realized.<sup>19</sup>

### *The Medical Illustration Service*

The aim of the Medical Illustration Service is, as its name implies, to serve the medical departments of the Armed Forces through the application of the graphic arts of pencil and brush, of photography and print, and of three-dimensional modeling. The field of service is, therefore, broader than that of pathology, and involves an exchange of information and an area of cooperation with the education and training divisions of the offices of the several surgeons general.

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<sup>19</sup> Annual Reports, Armed Forces Institute of Pathology, 1957, p. 37; 1959, p. 71.

In the earlier years of occupancy of the new building, the illustrative materials produced by the Service were not greatly used by the Navy and the Air Force, except as they participated in the materials used by the three-service Institute itself. As time went on, however, the direct use of Illustration Service materials by Navy and Air Force increased, although the Army, as might have been expected, continued to be by far the largest user of these products other than the Institute itself.

The breadth of the contacts of the Illustration Service is indicated by the fact that in 1960, by no means an unusual year, it collaborated with more than 165 U.S. Government, civilian, and foreign agencies in matters pertaining to exhibits, the loan of films, lantern slide teaching sets, training aids, and illustrations. In another year, 1957, it cooperated with 19 Federal agencies in exchanging information and services in the field of medical illustration, and its personnel participated in the activities of a dozen civilian societies and associations that have like interests.<sup>20</sup> In recognition of this breadth of contact, Mr. Herman Van Cott (fig. 119), Chief of the Service, was appointed to represent the Institute on the Interdepartmental Committee, now known as the Advisory Council on Medical Training Aids. The Council is composed of officially appointed representatives of the Army, Navy, and Air Force, the Veterans' Administration, the Public Health Service, and the Bureau of Indian Affairs. Its object is to review critically all training projects of the governmental agencies that are represented on the Committee.

A major activity of the Service is the preparation and showing of exhibits featuring medical information. In the years 1955-1961, 543 such exhibits were constructed, and 2,102, including those constructed in earlier years, were shown at local, State, and national meetings of medical associations and at other scientific gatherings. Seventy-nine, or more than one-sixth of those constructed in the years covered, won awards and official commendations (fig. 120).

From 20 prototyped wound moulage kits, developed by the Training Aids Division of the Illustration Service, the Office of the Surgeon General of the Army had 525 individual moulages depicting a variety of wounds made up, and tried them out in several maneuvers and field exercises. The moulages were so graphic in effect and so accurate in reproducing the appearance of wounds that they were standardized for Army use and, as a step toward uniformity in nomenclature of wounds among the Allies in the North Atlantic Treaty Organization, copies of the kit were sent to Great Britain, France, and Canada. In the light of the possible interdependence of the NATO nations for medical care of their

<sup>20</sup> Annual Reports, Armed Forces Institute of Pathology, 1957, p. 44; 1960, p. 25.

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FIGURE 119.—The evolution of an emblem. A. Sketches showing steps in the development of the idea for the Institute seal by Herman Van Cott, Chief of the Medical Illustration Service.

respective personnel in time of emergency, the Medical Illustration Service proposed that a graphic training aid, based on the 1958 Emergency War Surgery, NATO Handbook, be prepared and circulated (fig. 121). This proposal was approved, and the Illustration Service was asked to develop the necessary 300 overhead projector transparencies, designed to reinforce the Handbook in the instruction of Allied doctors and ancillary medical personnel. In the development of these visual aids, Lt. Col. Kathleen Phillips, ANC, USA, assigned to the Medical Illustration Service, had an important part. Preliminary sets were distributed to major medical installations in the United States and oversea commands by October 1960. After field testing and minor revisions, the set of 304 transparencies was standardized by the Army as an official graphic training aid.<sup>21</sup>

<sup>21</sup> (1) Annual Report, Armed Forces Institute of Pathology, 1959, p. 80. (2) Office Memorandum, AFIP, undated.

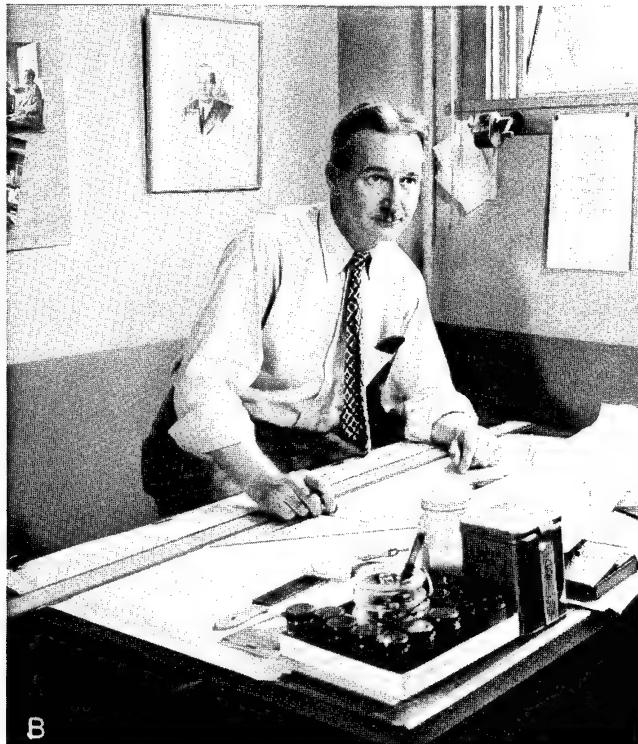


FIGURE 119.—Continued. B. Mr. Van Cott at work.

In addition to this vivid depiction of war wounds, the Illustration Service continues its pictorial part in the war against disease. In this, it is greatly aided by the new equipment which came with the new building (fig. 122). This includes a new offset press, a hand proving press, a 24-inch processing camera, and other new items to speed up and improve the quality of reproduction of the plates in the "Atlas of Tumor Pathology." Its publication is further aided by a new collating rack in the bindery, which makes it possible for one person to collate the pages of an entire volume without lost motion. Such a rack, designed by those who were to use it in "picking up" some 5- or 6-million pages a year, is a far cry from the pigeonholes on the stairway of the old building, in which the pages of early publications of the Medical Museum were placed to be collated, a few at a time, by members of the staff en route to and from the rest rooms in the old building.

Another segment of the Illustration Service which was enabled to increase and improve its output upon removal from cramped quarters on the topmost floor of the old building is the Photography Division, which normally turns

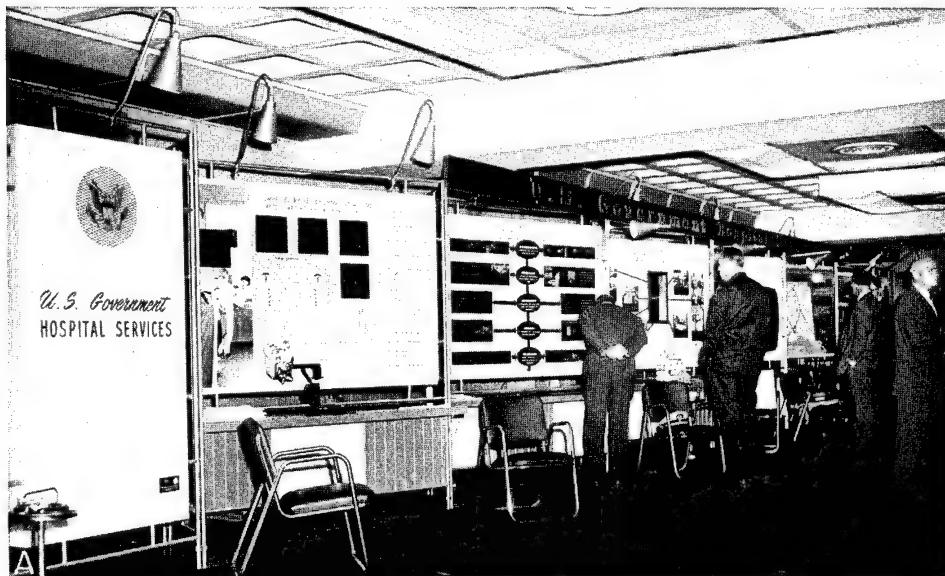


FIGURE 120.—Award-winning exhibits of the Medical Illustration Service. A. Full-size exhibit which is shipped to the place of showing.

out a quarter of a million pieces of its work in a year and has, upon occasion, turned out more than 350,000 items (fig. 123). This output includes photomicrography and color reproduction, as well as what might be called normal black-and-white representations of pathology subjects.<sup>22</sup>

### *Television*

Another interesting installation in the Institute of Pathology building is the main studio and control center for the television facilities of the Walter Reed Army Medical Center. These facilities include also studios in Walter Reed General Hospital, and the Walter Reed Army Institute of Research, and are hooked up in the hospital network of the Washington area. Programs of scientific interest, broadcast by closed-circuit transmission, are seen and heard at the National Institutes of Health, the National Naval Medical Center, the hospital at Andrews Air Force Base, the James C. Kimbrough Hospital at Fort Meade, Md., and the Wallace DeWitt Hospital at Fort Belvoir, Va., as well as on some 170 receiving sets in the Walter Reed area.

The broadcasting range is further extended by the ability to transmit programs on commercial facilities for closed-circuit showing at a distance from

<sup>22</sup> Annual Report, Armed Forces Institute of Pathology, 1961, pp. 215-225.

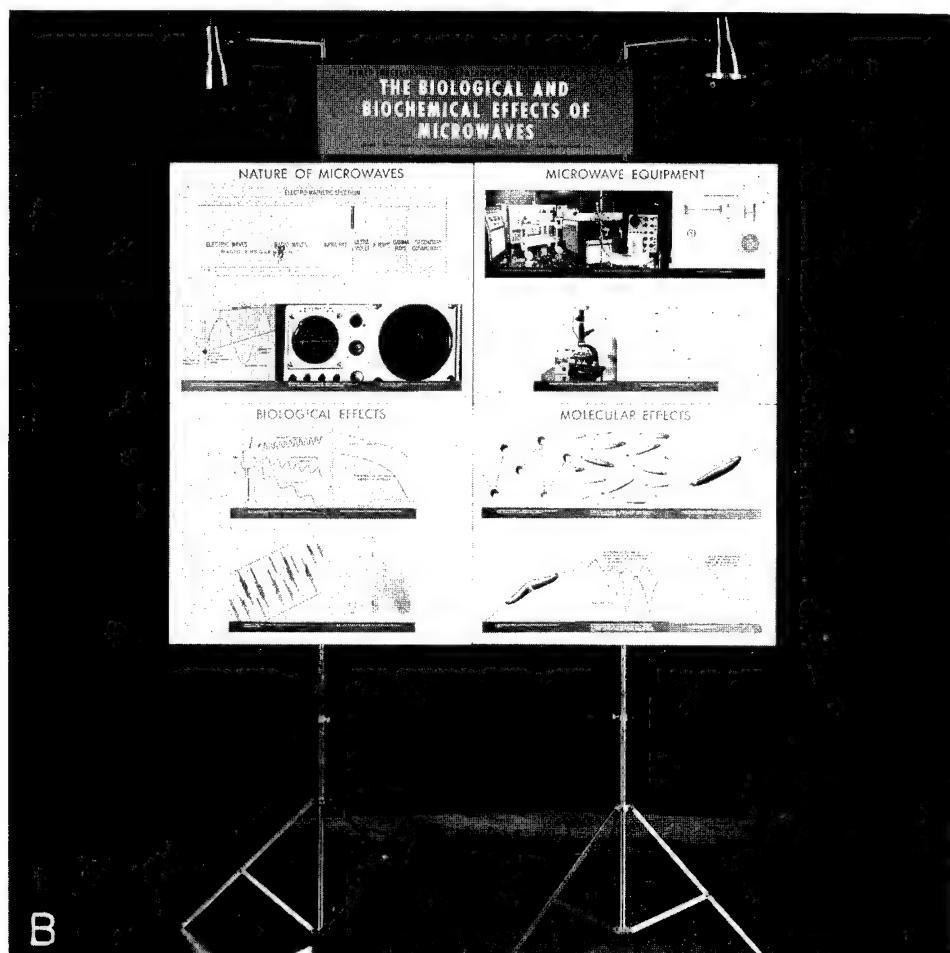


FIGURE 120.—Continued. B. Light, portable type exhibit which can be carried by one man.

Washington. It is feasible, indeed, to have programs originating in the Walter Reed studios distributed over the facilities of nationwide broadcasting networks, as has been done upon occasion.

The assignment of space in the Institute of Pathology building for the installation of television facilities for the Medical Center was planned from the beginning, and contracts with the Radio Corporation of America for the installation were made in June 1955, within weeks after occupation of the new building. The installation, completed in late 1956, includes facilities for producing both black-and-white and color programs. One unusual feature of the equipment is a color-television camera, mounted in the ceiling of the hospital operating room, arranged for 360-degree viewing from any part of the



FIGURE 121.—For uniformity in war surgery, this material, based on the NATO Handbook, is designed to lessen the language barrier among the medical officers of the NATO nations by telling its story largely in pictures.

room, with remote control so that the cameraman need not be in the operating room itself (fig. 124). A similar overhead camera is mounted in the McNabb Autopsy Suite in the Institute building. With such equipment, an audience of any desired number may view the details of a surgical or autopsy procedure, without the necessity of straining and craning of necks in trying to see what goes on from the limited seating area of an operating theater.

The use of television to facilitate consultation between the surgeon in the operating room and the pathologist in the laboratory, while theoretically feasible, has not been used as widely as was anticipated, presumably because of the practical difficulty in sending and receiving meaningful specimens and slides suitable for simultaneous viewing and diagnostic discussion at a distance.

As a means of broadening and sharpening the teaching of medicine, however, the television camera and receiving sets are finding more and more uses. This is due, in part, to the presentation of televised operations to medical student audiences, but in larger part, to the possibilities for recording and rebroad-



FIGURE 122.—Printing the fascicles of the *Atlas of Tumor Pathology*.

casting significant segments of medical subjects through the medium of motion-picture films or kinescopes of operations and techniques (fig. 125).

The possibilities inherent in such additional uses of the television camera have been enormously enlarged by the development of video magnetic tape. This development, which is compatible with the equipment at Walter Reed, records the living program, both picture and sound, on magnetic tape, from which it can be transferred to motion-picture film, available for showing on any 16-mm. projector, or can be reproduced directly from the tape wherever compatible equipment is available. Thus, a program recorded on video tape is multiplied many times over as an educational medium, reaching by sight and sound many audiences besides the original viewers of the program. Indeed, the potential audience is as vast as that afforded by the nationwide network of television cables, microwaves, broadcasting stations, and receiving sets that make up the great system of visual and sound intercommunication, included in the one word—television.

Of more immediate application, however, is the practice of exhibiting programs, through closed-circuit facilities, to audiences assembled in Dart Audi-

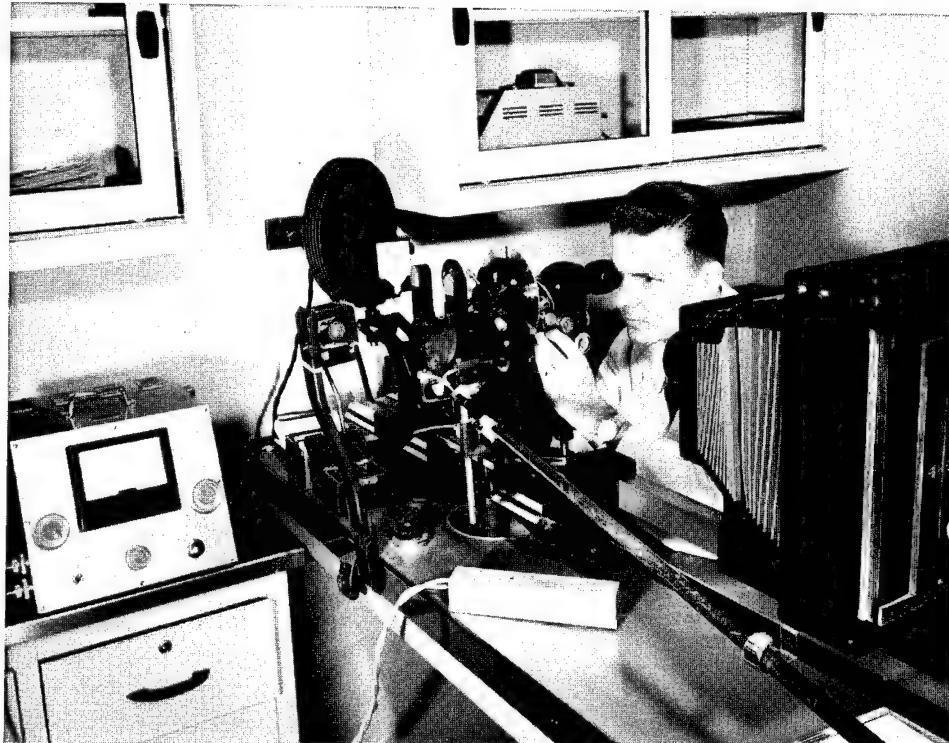


FIGURE 123.—Modern photomicrography apparatus.

torium of the Armed Forces Institute of Pathology; Sternberg Auditorium in the Walter Reed Army Institute of Research; or the post theater of Walter Reed Army Medical Center. To such audiences, it is possible to transmit by sight and sound, in black and white or in color, significant operations, "live" or by delayed broadcast; microscopic studies for simultaneous viewing, rather than having the viewers wait their turns at the microscope; lectures and discussions, with accompanying illustrative materials; or other demonstrations of educational interest—all viewed on a picture screen of 6 by 8 feet, if in color, or 9 by 12 feet, if in black and white.

As part of the educational aspect of its threefold mission, the Armed Forces Institute of Pathology, particularly through the efforts of Dr. Robert E. Stowell, its Scientific Director, contributes to the Medical Center's television programming, with discussions, demonstrations, and illustrations of pathology material by members of the Institute staff and consultants.<sup>23</sup>

<sup>23</sup> Illustrated brochure, Radio Corporation of America, Walter Reed Army Medical Center, 1 November 1957.

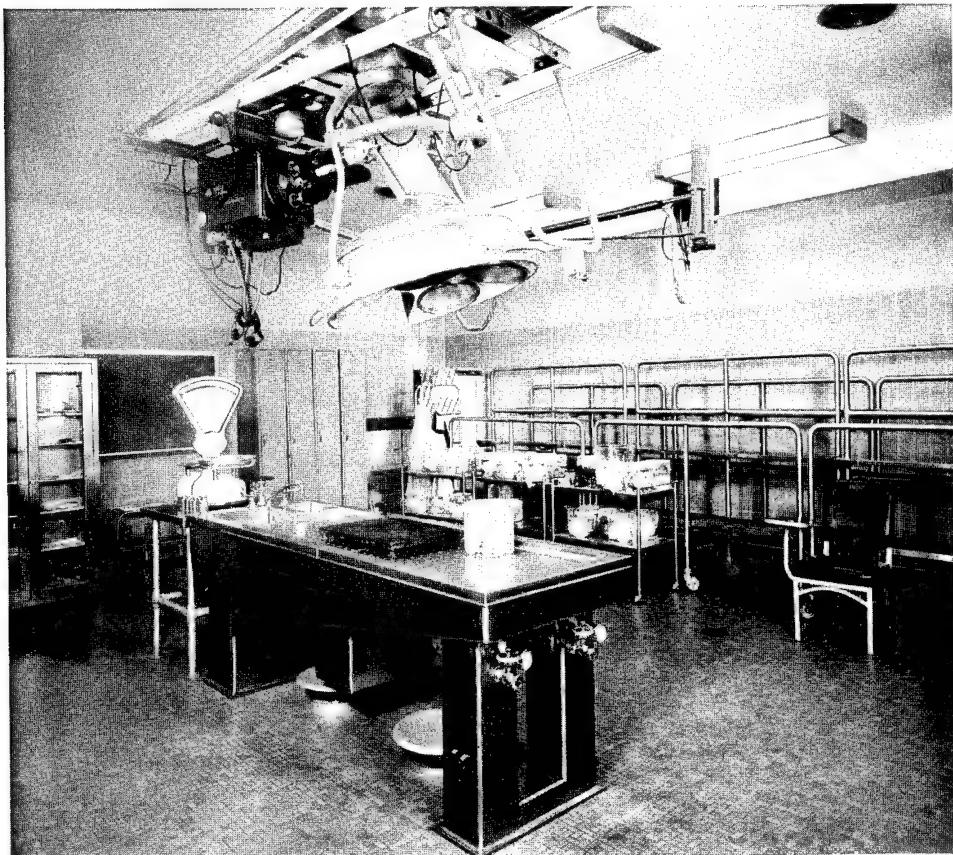


FIGURE 124.—Television camera mounted in ceiling of Armed Forces Institute of Pathology autopsy room.

### *The Museum's Movements*

The department of the Institute least affected by the move into the new building in 1955 was the Museum, the ancestor organization which had, in 1947, already vacated its quarters in the old building. When the Institute moved, it took with it those sections with which the Museum shared Chase Hall, leaving to the Museum the entire building. In addition, the Cornell Museum, open only to the medical profession, was taken out of Chase Hall and removed to the new building. Col. Hugh R. Gilmore, Jr., MC, USA, who had been Curator of the Museum since 1953, continued to head the entire Museum, dividing his attention between the professional museum quartered in the new building, and the two branches that continued in Chase Hall—the Lay or Public Museum and the Museum Laboratory.



FIGURE 125.—Lectures, with and without the use of visual aids, are an important part of the Institute's educational mission. In this instance, Col. Joseph L. Bernier (later Maj. Gen. and Chief of the Dental Corps, U.S. Army), is backed up by television images on four receiving sets.

With the increased room available in Chase Hall, it became possible to take many specimens out of the footlocker storage to which they had been consigned when the wanderings of the Museum had begun, 15 years before. Funds were found, moreover, for the purchase of 36 new-type exhibit cases for the display of specimens under more advantageous conditions.<sup>24</sup>

This slight easing of space pressures, however, and the improvement of display materials, did not end the vicissitudes and wanderings of the Museum. Chase Hall was squarely within the area of the Southwest Washington Urban Renewal Project, and was known to be doomed at an early date. The question was, therefore, one of finding new quarters before the present ones were taken over by the wreckers as part of the rebuilding of a section of the city.

Nevertheless, doomed to destruction as the building was, the curators and staff of the Museum attempted, with quite a remarkable degree of success, the task of refurbishing and enlivening the quarters in which the Museum was located. Colonel Gilmore retired from active service in June 1955, and was

<sup>24</sup> Annual Report, Armed Forces Institute of Pathology, 1955, pp. 35-37.

succeeded by Dr. Alfred Plaut, of the Institute staff, as Curator, with Lt. Col. Harvey W. Coddington, MSC, USA, as Assistant Curator. In the few months during which this arrangement was in effect, Dr. Plaut devoted most of his attention to the Cornell Museum, which was housed in the AFIP building, and Colonel Coddington attended mostly to the affairs of the rest of the Museum.

In March 1957, Colonel Coddington became Curator of the Museum, the first Medical Service Corps officer to do so. His task was described as "maintaining two unique collections, both devoted to the \* \* \* preservation and display of selected medical material of historical and scientific worth." Among the new exhibits shown were those of "Space Biology," "Psychiatry in Operation Deepfreeze," "Medical Aspects of Aircraft Investigations," and "Women in Medicine." During the year, 15 guest exhibits were shown.

In 1957, also, the task of cataloging the Museum's collection of nearly 500 microscopes (fig. 34, pp. 86-87)—probably the world's largest and most representative collection of the basic tool of the pathologist—was completed. In 1957, also, the number of visitors to the Museum exceeded 200,000 persons for the first time, reaching 221,000.

Early in 1958, Colonel Coddington returned to his duty in the Office of The Surgeon General, and was succeeded at the Museum by Col. Albert E. Minns, also of the Medical Service Corps of the Army. The new Curator was a graduate of the School of Pharmacy of the University of Buffalo, and the University College of the University of Maryland. In a service of 3½ years as Curator, he sought to give the Museum a "living atmosphere" by the rotation and refurbishing of 218 out of a total of 715 exhibits shown in that period.

In April 1959, the Cornell Museum was moved out of the Institute building and installed intact in a suitable room, access to which was limited to the medical profession, in the Chase Hall quarters of the Museum. In this year, also, the number of visitors to the Museum rose to 363,000—by far the highest number in any previous year.

Even this record, averaging 1,000 visitors daily—the Museum being open to the public 365 days a year—was broken in the next year, 1960, when the number of visitors reported went up to 587,000. For the first 11 months of the year, visitors came to the temporary quarters in Chase Hall which had been home to the Museum for 13 years, but which was scheduled for demolition early in 1961.

In November and December 1960, therefore, the Museum moved into quarters shared with other Government agencies in another temporary building designated as "Tempo S" and located only a block away, at Jefferson Drive between Sixth and Seventh Streets, SW. The move was well planned and smoothly performed, with the laboratory and exhibit materials moved out of the

old quarters and into the new in such fashion that the Museum was never closed down and remained open to visitors throughout the move.

### *International Efforts*

Colonel Minns, the Curator under whom this successful move was made, reached the statutory age of retirement in June 1961, and after some delay, was succeeded as Curator by Col. John W. Sheridan. The new Curator was also of the Medical Service Corps of the Army, the third Curator in succession to be chosen from this source. As had been the case of his predecessor, he was to be called upon to move the Museum—this time from Tempo S to the “old red brick” that had been its home for 60 years prior to 1947.<sup>25</sup>

While the Museum had from its early years attracted a degree of international attention—winning the praise of Virchow himself for the contributions of the “Medical and Surgical History of the War of the Rebellion”—its lack of facilities for advanced experimentation had severely limited its participation in international study efforts. Occupancy of the new building by the Institute opened up new avenues for such participation in the worldwide war against disease which knows no national boundaries. Such a war calls for a common medical language for international communication of the results of research in both the clinic and laboratory.

The Museum and its successor, the Institute, had participated in this international effort, notably through the publication of the fascicles of the “Atlas of Tumor Pathology,” devoted to developing a nomenclature of tumors in the communication of the results of medical research which could surmount the barriers of ordinary language differences.

A further step in this direction was taken on 2 December 1958, when the World Health Organization, the National Research Council, and the Armed Forces Institute of Pathology signed a three-way agreement for the establishment of the International Reference Center for Soft Tissue Tumors. Pursuant to the agreement, the Institute selected from its collection a general histologic reference set of tumors of the soft tissues, with an accompanying syllabus and classification of tumors of these tissues.

This material was sent to the headquarters of the World Health Organization at Geneva, Switzerland, where a meeting of an Expert Committee on Cancer was held in the last week of June 1959. This meeting, attended by pathologists from various parts of the world, agreed upon a tentative classification of soft tissue tumors, and plans for future operation of the Reference Center.

<sup>25</sup> Annual Reports, Museum sections, Armed Forces Institute of Pathology, 1955–1961, *passim*.

The latter half of 1959 was given over to the collection of soft tissue tumors of various types from the Institute files and their classification in accordance with the tentative classification agreed upon at Geneva. Microscope slides, paraffin blocks, tissues, and records were collected, and the first histological reference set of fibrous tissue tumors, with an accompanying syllabus, was prepared. This material was widely circulated for review and comment. The revisions indicated were made and, in the spring of 1960, 50 sets of material on tumors of fibrous tissues were made up. Each set consisted of 25 representative sections of tumors of fibrous tissues, with a syllabus which contained a general discussion of the diagnostic difficulties involved, and with a description and discussion of each type of tumor and a clinical history and comment on each case. In addition to the 50 sets sent to the World Health Organization at Geneva, for distribution to the health centers of cooperating nations, 30 sets were turned over to the American Registry of Pathology to be loaned to individual pathologists.

A second international reference set of 25 cases each, dealing with tumors of adipose tissue was prepared early in 1961, in an "edition" of 100 sets, and received a similar distribution.<sup>26</sup>

An earlier instance of international cooperation is the Joint Committee on Aviation Pathology—a group which is "joint" in a double sense in that it is jointly representative of the three armed services of the United States, as well as being representative of the medical departments of the armed forces of Canada and the United Kingdom. The Committee dates from 1955, when it was established by a directive of the Department of Defense, amplified by jointly issued regulations of the Armed Forces.

The Committee grew out of discussions, in 1954 and 1955, among pathologists interested in the application of pathology to aviation accidents. The group included Wing Commander (later Air Commodore) Bruce Harvey, Medical Service, RAF; Capt. S. I. Brody, MC, USN; Dr. Howard T. Karsner, Medical Research Adviser, U.S. Navy, Bureau of Medicine and Surgery; Col. Frank M. Townsend, then Deputy Director and later Director, Armed Forces Institute of Pathology; and Dr. F. K. Mostofi, of the Institute. As a result of several meetings of this group, the Department of Defense issued, on 14 November 1955, a directive setting up the Joint Committee on Aviation Pathology, with headquarters at the Institute, where permanent files of the findings and other records of the Committee are maintained.

The Committee is charged with the duty of collecting information on the correlation between pathological evidence and the factors which cause aircraft

<sup>26</sup> Annual Report, Armed Forces Institute of Pathology, 1959, p. 65.

accidents, making detailed pathological studies to help determine the cause of unexplained aircraft accidents, improving flight safety by taking into account pathological conditions, and investigating factors which may result in pathological changes in flight personnel.

A prime purpose of the Committee is to insure, insofar as it may be possible to do so, that medical officers shall have full opportunity to participate in the investigations of aircraft accidents. From examinations made on the scene and pursued further in the laboratory, the pathologist may determine what part was played by human or environmental factors in causing the accident. He can weigh the evidence pointing to some medical condition, such as shortage of oxygen, presence of carbon monoxide, explosive decompression or pre-existent disease in the pilot, or he may note a pattern and sequence of injuries that point to some failure or improper design of the aircraft itself. For example, it was medical investigation of a commercial airliner crash near Bolivia, N.C., on 6 January 1960, by representatives of the Joint Committee, that led other investigators to find that the accident was due to the explosion of a bomb smuggled aboard by a passenger.

### *Aerospace Pathology*

Closely related to the work in aviation is that of aerospace pathology which, in the AFIP organizational setup, is one of three branches of the Division of Military Environmental Pathology. Aerospace pathology deals with the pathological conditions encountered in the flights into outer space by biopack mice and monkeys, and animals of various kinds, preparatory to flights by men, and the increasingly numerous flights by men themselves.<sup>27</sup>

Not all of the adventure in such flights, by any means, is that of those who ride the vehicles into space, or at least into the extreme heights of rarefied atmosphere. There was, for example, the flight of the Air Force balloon to investigate the risks to future travelers in the stratosphere from cosmic rays, sent up from International Falls, Minn. The balloon carried a cargo of live mice and tissue cultures that would have to be examined immediately, or within a very few hours, after the return of the balloon from stratosphere to earth. For this reason, it was imperatively necessary that the pathologists who were to make the examination should reach the place where the balloon came down promptly after its descent. In an engagingly humorous account of "Operation

<sup>27</sup> (1) Army Regulations No. 15-97, Bureau of Medicine and Surgery Instruction 6510.6, Air Force Regulation No. 160-127, "Joint Committee on Aviation Pathology," Departments of The Army, The Navy, and The Air Force, 3 September 1957. (2) Office Memorandum, AFIP, 28 March 1960, Summary of Activities through February 1961.

Stratomouse," published in *Military Medicine* in 1956, Dr. Webb Haymaker of the Neuropathology Section of the AFIP, tells of the adventures and misadventures of the reception crew as they chased an unpredictable balloon in an ancient and vibratory C-47 plane, a truck, and a taxicab across North Dakota, into Montana, and back to Minnesota—to find that 90 out of 93 precious mice were alive and well, while autopsies of the three that were dead disclosed no effects of cosmic rays.<sup>28</sup>

The investigation as to the effects of cosmic rays upon the central nervous system of animals was continued for several years, the latest experiment having been conducted at Fort Churchill, Canada, in the summer of 1961. In this experiment, 8 monkeys and 24 mice were sent aloft nearly 24 miles, where they floated for about 10 hours.

Another area of the activities of the National Aeronautics and Space Administration in which the support of the Institute's Animal Care Branch was used, was in the animal flights into space which were an essential preliminary to the manned flights of Project Mercury. Personnel of the Institute who had received special training in handling chimpanzees were deployed in the anticipated landing areas to care for the animals after they had landed from their flights. The skeleton of one of the animals, "Able" whose death did not result from his flight, but from a subsequent operation, is an exhibit of interest in the Medical Museum.

Like everything else connected with space exploration, bioastronautics, as space medicine is beginning to be known, is growing in interest and importance. In connection with man's entry into space, the Institute has conducted studies of radiation, decompression, rapid acceleration and deceleration, and hypoxia, and the correlation of basic sciences with such specialized studies. The results are made available to Project Mercury, particularly through the membership of the Director of the Institute on the team of medical specialists that support the manned flights of the project. Thus, Colonel Townsend participated in the arrangements and conduct of the suborbital flight of Cdr. Alan B. Shephard, Jr., USN, on 1-5 May 1961; the like flight of Capt. Virgil I. Grissom, USAF, on 17-21 July 1961; the orbital flight of Lt. Col. John H. Glenn, Jr., USMC, on 12-21 February 1962; and the second orbital flight, that of Lt. Cdr. Malcolm Scott Carpenter, USN, on 23-26 May 1962. Colonel Townsend was represented in the six-orbital flight of Cdr. Walter M. Schirra, Jr., USN, by Lt. Col. David Auld, USAF, MC, who was detailed to serve on the team at Cape Canaveral, Fla., from 29 September to 5 October 1962.

<sup>28</sup> Haymaker, Webb: Operation Stratomouse. *Military Medicine* 119: 151-171, September 1956.

## CHAPTER XVIII

# Into the Second Century

In the 99th year of its life, the Institute was partially reorganized to bring into sharper focus the contribution of its various activities to the accomplishment of the threefold mission of consultation, education, and research (fig. 126). It was recognized that the three were inextricably interwoven in the pattern of the everyday work of the departments, divisions, and branches of the Institute, but it was felt nevertheless that the multifarious activities of the Institute should be under continuing examination as to their educational, consultative, and research aspects.

To this end, three members of the staff were designated as secretaries of Education, Research, and Consultation, respectively. In their capacity as Secretaries, the three staff members work under the direct control of the Director, and are charged with the responsibility of keeping the directorate and the Scientific Director of the Institute advised as to the bearing of the work of its several departments upon the three main missions. As expressed in the memorandum outlining the duties and responsibilities of the Secretary of Education, the secretaries are "to maintain constant and close coordination with all Institute activities to determine the latest trends and accomplishments in the education mission."<sup>1</sup>

### *Organization*

The organization with which the secretaries were to maintain "constant and close coordination" was that with which the Institute entered the second century of its life (fig. 127). It consisted of the four principal departments—the Department of Pathology, the American Registry of Pathology, the Medical Illustration Service, and the Medical Museum—and the administrative services applying to all four departments. The entire operation was under the direction and control of The Director (Col. Frank M. Townsend, USAF, MC), assisted by the two Deputy Directors (Col. Joe M. Blumberg, MC, USA, and Capt. Roger

<sup>1</sup> (1) General Orders No. 18, Hq., AFIP, 23 May 1961. (2) Memorandum Number 63, 25 October 1961.

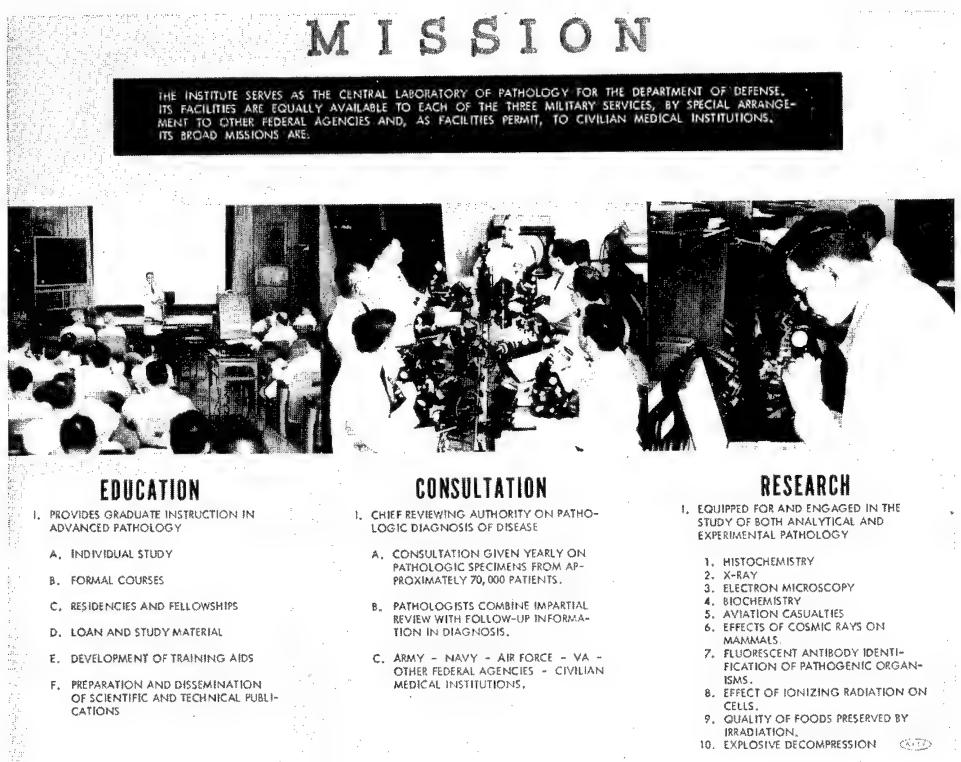


FIGURE 126.—Threefold mission of the Institute.

H. Fuller, MC, USN), and by the Scientific Director (Dr. Robert E. Stowell), and advised by a scientific advisory board of 18 eminent practitioners of pathology. The affairs of the Institute are conducted in accord with policies determined by the Board of Governors—Lt. Gen. Leonard D. Heaton, The Surgeon General of the Army; Rear Adm. Edward C. Kenney, MC, USN, The Surgeon General of the Navy; and Maj. Gen. Oliver K. Niess, The Surgeon General of the Air Force. The members of the Board of Governors (fig. 128) are, upon occasion, represented by designated alternates—Brig. Gen. Howard W. Doan for the Army; Rear Adm. Allan S. Chrisman for the Navy; and Maj. Gen. Richard L. Bohannon for the Air Force.

Under the immediate control of the directorate is the Executive Officer (Lt. Col. Vernon S. Oettinger, MSC, USA), and five administrative services (fig. 129). These include the Adjutant (Lt. Col. Russell Z. Seidel, MSC, USA), under whose direction is the Ash Library (Mrs. Ruth Haggerty), which issued more than 13,000 books and journals to patrons, and served nearly 15,000 readers

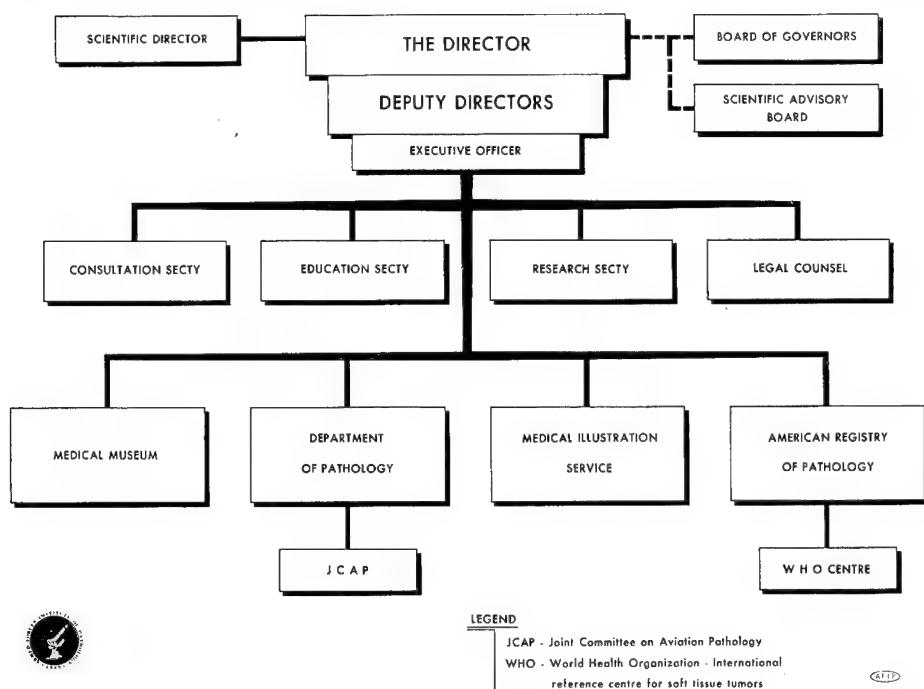


FIGURE 127.—The Institute Organization, 1962.

during the year 1961; the Mail Room, which handled nearly 350,000 letters and 33,000 parcels, and mimeographed nearly 1,900,000 sheets in the year; the preparation of reports and forms, and the reception of foreign nationals, of whom 90, representing 34 countries, were at the Institute as trainees and 704, representing 79 countries, were there as visitors in the year 1961.<sup>2</sup>

Other administrative units reporting to the directorate through the Executive Officer are the Budget and Management Office (Cdr. Heyward E. Hall, MSC, USN), and the Personnel Division (Lt. Col. Walter F. Maybaum, MSC, USA); the Supply and Services Division (Maj. Bryce L. Moschel, MSC, USA), which reported that "shortage of funds for procurement of equipment plagued the Division during the entire year," to such an extent that the equipment replacement program was "practically nonexistent"; and the Technical Liaison Office (1st Lt. John L. Bryant, Jr., USAF, MSC). The Technical Liaison Office issued the monthly "AFIP Letter" to a mailing list of more than 2,300 members of the medical, dental, veterinary, and allied scientific professions, while the

<sup>2</sup> Annual Report, Armed Forces Institute of Pathology, 1961, pp. 240-247.

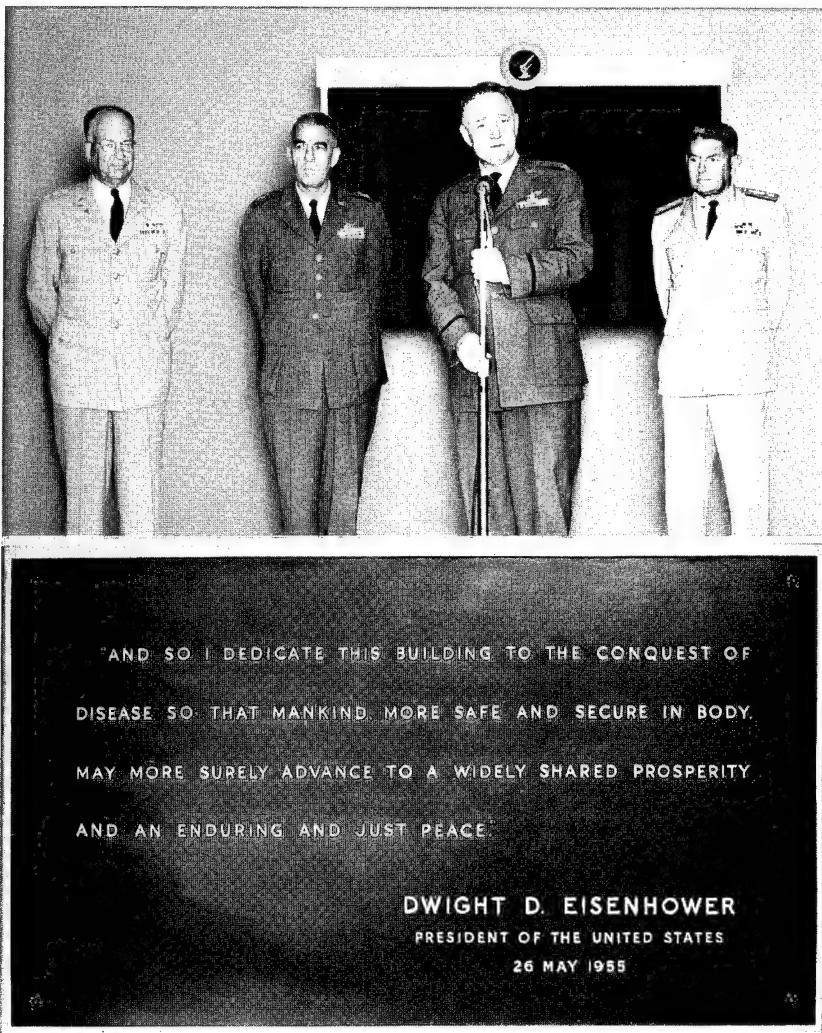


FIGURE 128.—The three Surgeons General and the Director, AFIP, participate in the unveiling of a plaque on 19 July 1962. Left to right, Lt. Gen. Leonard D. Heaton, Maj. Gen. Oliver K. Niess, Col. Frank M. Townsend, USAF, MC, and Rear Adm. Edward C. Kenney. The plaque, containing the heart of President Eisenhower's 1955 dedication address, was placed at the main entrance of the Institute.

Editorial Office (Miss Laura A. Gibbs) edited 145 manuscripts for publication or oral presentation; processed 41,000 reprints of articles by members of the Institute staff; and issued a bibliography of their articles and books published in 1961, numbering 91 titles.



FIGURE 129.—Executive officer and administrative staff. Front row (left to right): Lt. Col. L. J. Neurauter, USAF, VC, Lt. Col. R. Z. Seidel, MSC, USA, Lt. Col. V. P. Verfuerth, MSC, USA, Lt. Col. W. F. Maybaum, MSC, USA, Maj. B. L. Moschel, MSC, USA. Back row (left to right): Maj. O. L. Norrell, Jr., MSC, USA, Lt. T. O. Jordan, MSC, USN, 1st Lt. J. L. Bryant, Jr., USAF, MSC, J. L. Evans, Maj. W. R. Rule, USAF, MSC, Capt. B. P. Chambers, USAF, MSC, Capt. J. R. Green, USAF, MSC. Missing from this photograph is Lt. Col. V. S. Oettinger, MSC, USA, who retired and was replaced by Colonel Verfuerth.

### *The Four Departments*

Of the four departments of the Institute, the largest by far is the Department of Pathology (fig. 130), headed by Dr. Elson B. Helwig as Chief, with Col. Paul C. LeGolvan, MC, USA, as Assistant Chief. As it was organized at the start of the second century of the life of the Institute, the Department consisted of eight professional divisions (fig. 131) and an Administrative Office, under Lt. Col. Nathan Cooper, USAF, MSC, the mission of which was "to give the professional staff the utmost administrative support" (fig. 132). This is accomplished through the Professional Records Service (Maj. Charles B. Broadway, USAF, MSC), the Histopathology Laboratories (Mr. Lee G. Luna), and the Education Office, which provides continuous on-the-job training for staff personnel, and trains technicians from other installations, both civilian and military, in special techniques developed at the Institute. The degree of success that attends these training efforts may be gaged by the fact that, in 1961, 13 members of the laboratory staff applied for and took the examination for certification in histopathology given by the American Society of Clinical Pathologists, and all 13 passed and were certified.

## ARMED FORCES INSTITUTE OF PATHOLOGY

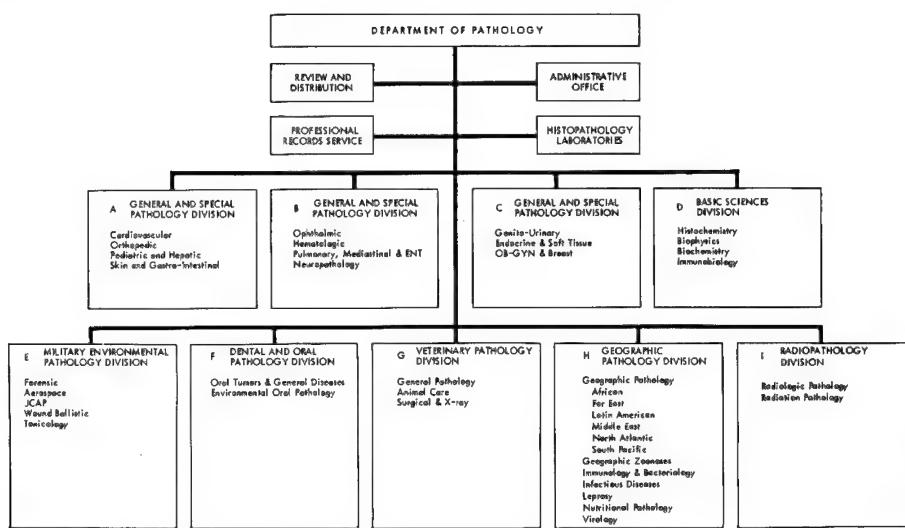


FIGURE 130.—Organizational chart, Department of Pathology, 1 February 1962.

Among the techniques used at the Institute is one applied by the late Lawrence W. Ambrogi (fig. 133), Chief of the Histopathology Laboratories, who served the Institute for all but 4 of the 40 years before his sudden death in December 1960. In the last year of his life, Mr. Ambrogi adopted a new technique which makes possible the distribution of microscopic sections by first-class mail at nominal expense and without fear of breakage. The sections are mounted and sealed inside plastic sheets which can be folded, creased, or crumpled without harm to the sections. Upon arrival at destination, the sections may be cut out of the plastic sheet, mounted between glass slides, and examined by microscope in the usual fashion.<sup>3</sup>

The Professional Records Service of the Department of Pathology includes sections for Receiving and Accessions, Tissue Processing, Professional Files, Machine Records, Medical Statistics, and a Library of Medical Records. The Service maintains "vast and voluminous" files of diagnostic information, both in the form of specimens and on diagnostic cards, of which there are in the files literally millions. The system is designed for ready reference to any case, with cards crossfiled and indexed to the etiology or cause of the disease, and to the topography or location of its lesions. There are thus not less than two diagnostic cards crossfiled and indexed to the etiology or cause of the disease, and to the

<sup>3</sup> (1) Annual Report, Armed Forces Institute of Pathology, pp. 79-85. (2) Transactions of the American Academy of Ophthalmology and Otolaryngology, January-February 1961, pp. 79-80, 100.

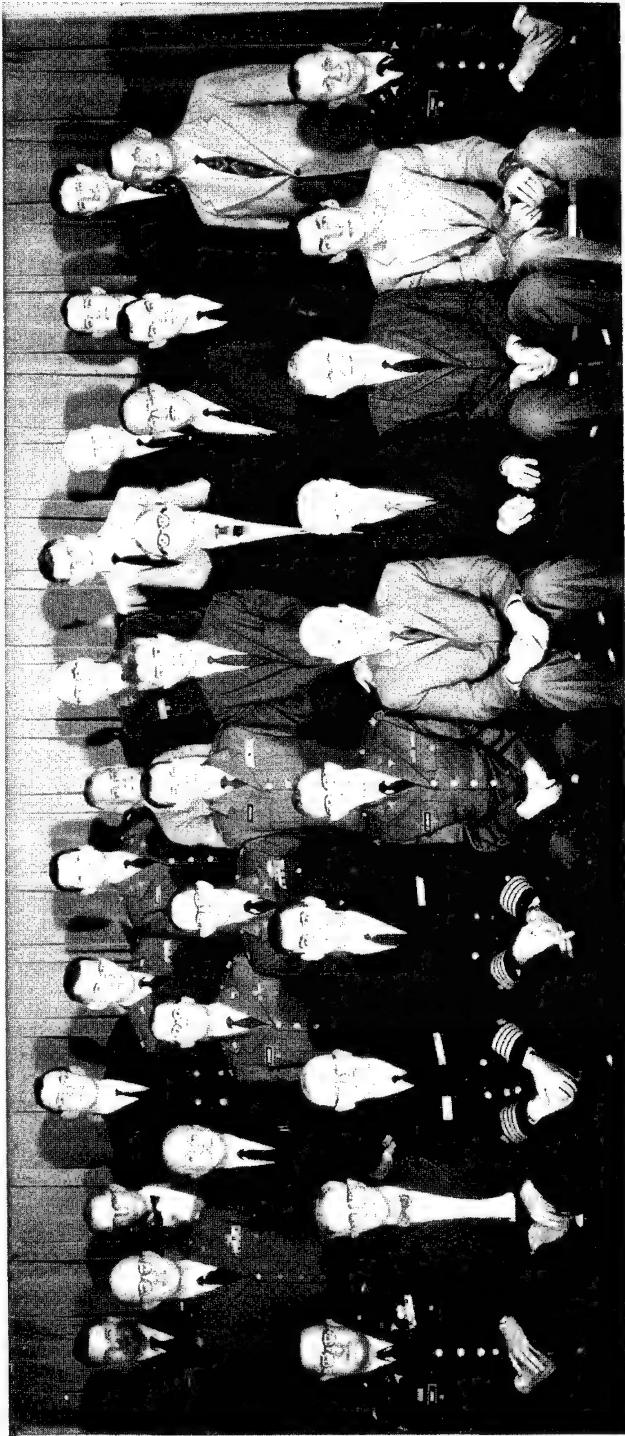


FIGURE 131.—Department of Pathology staff, Professional Divisions. Left to right, front row: Lt. Col. D. C. White, MC, USA, G. H. Klinck, M.D., Capt. A. W. Hilberg, USPHS, Capt. L. S. Hansen, DC, USN, Col. P. C. LeGolvan, MC, USA, E. B. Helwig, M.D., C. H. Binford, M.D., E. B. Smith, M.D., A. M. Silverstein, Ph. D., Maj. P. A. Finch, MC, USA. Center row: Maj. J. Cornyn, USAF, DC, S. H. Rosen, M.D., Capt. W. H. Davidson, USAF, MC, Maj. F. M. Garner, VC, USA, Lt. Col. R. M. Madison, USAF, USAF, VC, F. K. Mostoff, M.D., G. F. Bahr, M.D., H. B. Taylor, M.D., K. M. Earle, M.D. Back row: Capt. K. L. Kraner, USAF, VC, L. C. Johnson, M.D., Cdr. F. G. Steen, MC, USN, Col. T. J. Domanski, USAF, MSC, Lt. Col. E. H. Johnston, MC, USA, V. S. Waravdekar, Ph. D., Col. T. O. Berge, MSC, USA, L. E. Zimmerman, M.D., D. J. Winslow, M.D., Lt. Col. J. F. Metzger, MC, USA, W. C. Marion, M.D. Missing from this photograph are: H. F. Smetana, M.D., R. H. Follis, Jr., M.D., and Col. W. L. Thompson, MC, USA (Ret.).



FIGURE 132.—Administrative staff, Department of Pathology. Left to right, seated: Lt. Col. D. C. Auld, USAF, MC, Maj. C. B. Broadway, USAF, MSC, Lt. Col. N. Cooper, USAF, MSC, B. L. Parnell, D. G. Koelle. Left to right, standing: S. G. Corbett, G. M. Evans, M. S. Attaway, M. Y. Robeson, N. M. Beasley, L. G. Luna.

there being as many as half a dozen cards, or perhaps even more. Under serious consideration, as the second century of life of the Institute began, was discontinuance of the use of punchcards, and adoption of a system by which the millions of "memories" which make up the professional records of the Museum-Institute would be stored and made more readily available by the use of magnetic tape.

Many of these recorded memories are related to the tissues that are handled by the Tissue Processing Section. These specimens are being removed from cumbersome 20-gallon earthenware crock jars and placed in plastic bags. In 1961, despite the collapse of the roof of the Franconia, Va., warehouse wherein many of the specimens are stored, which caused a time loss of 2 months, more than 60,000 specimens were transferred from crocks to bags.

Space, or the lack of it, handicapped the Professional Records Service in several directions. The Professional Files Section, for example, which had paraffin blocks filed in two parts of the main Institute building beside those stored at Franconia, was compelled to seek more space. This was found, with the help of the Walter Reed Army Medical Center, in the basement of Delano Hall, the headquarters and home for the Walter Reed nurses. The Histopathology Laboratories also were plagued by a shortage of space, with 54 persons



FIGURE 133.—Lawrence W. Ambrogi, Chief, Histopathology Laboratories, who served for 36 years.

working in a space originally designed for not more than 35. Under these conditions, the laboratories turn out a load of work which is indicated by the preparation of some 350,000 microslides and the processing and cutting of 60,000 paraffin, celloidin, and frozen blocks per year.

The purpose of these supporting services was, primarily, to relieve the professional staffs of the divisions and branches of the Department of Pathology of detailed custodial and statistical duties, as far as possible.<sup>4</sup>

Three of the eight professional divisions of the Department of Pathology had to do with the general and special pathology of groups of diseases—Division A, under Dr. William C. Manion; Division B, headed by Dr. Lorenz E. Zimmerman; and Division C, by Dr. F. K. Mostofi.

Group A (Dr. Manion, Chief) includes the Cardiovascular Pathology Branch, of which Dr. Manion was also Chief; the Orthopedic Pathology Branch, headed by Dr. Lent C. Johnson; the Hepatic and Pediatric Pathology Branches, of which Dr. Hans F. Smetana was Chief; and two Branches, those of Dermal and Gastrointestinal Pathology, headed by the Chief of the entire Department, Dr. Helwig.<sup>5</sup>

Division B was headed by Dr. Lorenz E. Zimmerman, who was also Chief of the Ophthalmic Pathology Branch. The Hematologic Pathology Branch Chief was Dr. George Th. Diamandopoulos, while Dr. Samuel H. Rosen, who had played a leading part in the identification and description of a new disease entity, pulmonary alveolar proteinosis, served as Chief of the Branches of Pulmonary Pathology, and also Mediastinal Pathology, and Ear, Nose, and Throat Pathology. Division B also included the Neuropathology Branch, of which Dr. Kenneth M. Earle was Chief, having succeeded Dr. Webb Haymaker upon his resignation, in 1961, to join the staff of the Ames Research Laboratory in California. Dr. Earle came from the University of Texas School of Medicine at Galveston, where he was a neuropathologist and dean.<sup>6</sup>

Dr. F. K. Mostofi was Chief of Division C of General and Special Pathology, and also Chief of the Genitourinary Pathology Branch of that division. The Endocrine and Soft Tissue Pathology Branch was headed by Dr. G. H. Klinck, who took notice of the increasing trend toward sending in specimens from unusual and highly selected cases, only a small minority of which could be handled by form letters of receipt and acknowledgement. The third Branch of the Division, that of Obstetric, Gynecologic, and Breast Pathology, was headed by Dr. Herbert B. Taylor, who had succeeded Dr. Robert D. Neubecker at the end of August 1961.<sup>7</sup>

The Division of Basic Sciences was the charge of Dr. Frank B. Johnson, who also headed its Histochemistry Branch. Dr. Gunter F. Bahr was Chief

<sup>4</sup> Annual Report, Armed Forces Institute of Pathology, 1961, pp. 182-203.

<sup>5</sup> *Ibid.*, pp. 86-97.

<sup>6</sup> *Ibid.*, pp. 98-114.

<sup>7</sup> *Ibid.*, pp. 115-126.

of the Biophysics Branch, and Dr. Vaman S. Waravdekar headed the Biochemistry Branch. The Chief of the Immunobiology Branch was Dr. Arthur M. Silverstein.<sup>8</sup>

Much of the work of these branches is devoted to investigations in life processes which may not relate immediately to some disease but which provides basic knowledge and understanding. Reminiscent of the pioneering of the Medical Museum in the combination of the camera and the microscope is the work of the Biophysics Branch with the electron microscope and a photometer in determining the mass of biological particles so small that it can be expressed only in terms of a negative fraction of a gram raised to the 12th or even the 18th power—if such words as “mass” and “raised” can be meaningfully applied to anything so infinitesimally small.

Experiments underway in the Immunobiology Branch in the nature of the immunologic response of the mammalian fetus give promise of enlarging the understanding of the response to immunization, improving the comprehension of the pathogenetic features of the processes of fetal infection, and changing the concept of the beginning of the immunologic capability of the infant, which would seem to be at an earlier age than that commonly accepted.

The Radiation Pathology Branch, headed by Lt. Col. David C. White, MC, USA, reported in 1961 on more than 6,500 cases submitted for consultation, the main concern in most instances being a determination of the extent to which radiation contributed to, or was a significant factor in, the cases reviewed. The Radiation Pathology Branch also was a moving force in the creation of the 26th Registry, that of Radiation Pathology, which went into operation in the centennial year of the Institute.

The Division of Military Environmental Pathology was headed by Lt. Col. Edward H. Johnston, MC, USA, who also doubled as chief of its Forensic Pathology Branch. Maj. William R. Rule, USAF, MSC, Legal Counsel to the Institute, was active in the work of this branch, which conducted courses, held seminars, and provided residency training dealing with the many and varied ways in which problems of the law arise in the practice of pathology. For example, as part of the Medical Education for National Defense program, familiarly known as MEND, the Institute sponsored a 3-day symposium on the “Pathology of Trauma,” with an attendance of 160 professional registrants from medical schools throughout the United States, and 24 professional registrants from Government agencies other than the Institute.<sup>9</sup>

<sup>8</sup> *Ibid.*, pp. 127-139.

<sup>9</sup> *Ibid.*, pp. 140-153.

The Aerospace Pathology Branch, under Capt. W. Harley Davidson, USAF, MC, is closely allied in its operations with the Joint Committee on Aviation Pathology. The two organizations have similar missions in the pathological investigation of the human factors involved in aircraft accidents—to which is added, in the light of recent developments, pathology in space flight as well.

Since the formation of the Joint Committee, the Aerospace Pathology Branch of the Institute has acted as its headquarters staff. Maj. V. A. Stenbridge, the first Chief of the Branch, received the Legion of Merit for his outstanding contribution to aviation pathology. Staff members of the Branch have served as secretaries of the Joint Committee, beginning with Dr. Mostofi, followed by Capt. Murray Ballenger, MC, USN, and then by Maj. F. W. Lovell, who was both Branch Chief of the Aerospace unit and Secretary of the Joint Committee. The same combination of positions was held by Captain Davidson at the beginning of the Institute's second century of life.<sup>10</sup>

In the first 6½ years of its operation, Aerospace Pathology Branch personnel assisted in the investigation of 22 military aircraft accidents. In the years 1959–61, 23 civilian accidents were investigated at the request of the Civil Aeronautics Board. Altogether, the Branch has reviewed more than 3,000 cases from fatal aircraft accidents, both civilian and military.

Essential in the accomplishment of the mission of the Branch was the work of the Toxicology Laboratory established in 1956, which has done research in the pathology of the effects of carbon monoxide, hypoxia, alcohol, and drugs upon aircrew members. In November 1961, the Toxicology Laboratory was given the status of a branch under Col. Thaddeus J. Domanski, USAF, MC, as Chief. In the last 2 months of 1961, the first 2 months of its existence as a full-fledged Toxicology Branch, it received for toxicological examination 68 cases growing out of fatal aircraft accidents.<sup>11</sup>

Maj. Pierre A. Finck, MC, USA, doubled as Chief of the Wound Ballistics Branch of the Military Environmental Pathology Division, and also as the education officer for the Division, in which capacity 7 lectures and 30 division staff meetings were arranged. Among the guest speakers who gave lectures were Lt. Cdr. John H. Ebersole, first medical officer on the submarine U.S.S. *Nautilus*, and Capt. Joseph W. Kittenger of the Air Force, first man to jump from a height of more than 100,000 feet.

The Division of Dental and Oral Pathology was headed by Capt. Louis S. Hansen, DC, USN, who had succeeded Col. Joseph L. Bernier when the latter

<sup>10</sup> *Ibid.*, pp. 143–148.

<sup>11</sup> Annual Report, Armed Forces Institute of Pathology, 1961, pp. 151–153.

became a major general and head of the Army Dental Corps. Besides giving attention to consultation sought in about 250 cases per month, the Division carried on an active program in research and education. The use of loan materials in the form of microscope study sets and lantern slides was virtually doubled in 1961, as compared with 1960, while response to the Division's post-graduate short course on the pathology of the oral regions was such that 60 civilians who applied for the course had to be turned down because of lack of space.<sup>12</sup>

The Veterinary Pathology Division was headed by Lt. Col. M. A. Ross, VC, USA, who had succeeded Col. F. D. Maurer upon the latter's transfer in June 1961. The Division consisted of three branches, one on General Veterinary Pathology, of which Colonel Ross was Chief, and the others, on Animal Care and Surgery and X-ray, combined, with Capt. Keith L. Kraner, USAF, VC, as Chief. The work of this Division is ample proof of the error in the opinion that an army without horses would have no need for veterinary services. When it is considered that there are at least 80 diseases which are communicable from the lower animals to man, and that the laboratory animal is a necessary part of research dealing with human diseases, the importance of veterinary knowledge and services becomes apparent. Indeed, research into the maintenance in health of the colonies of laboratory animals becomes the more important since the validity of the results of experimentation may be impaired if the animals used are not healthy specimens. More recently, there have been other calls for veterinary science in the space tests of animals which were an essential preliminary to space flights by man.<sup>13</sup>

Newest of the eight divisions of the Department of Pathology is that of Geographic Pathology, of which Dr. Chapman H. Binford is Chief. The assignment of the Division is the study of the peculiarities of disease as affected by topography, climate, food habits, and population of various regions of the earth, with special attention to infectious diseases that might be encountered by persons going into unfamiliar environments. To this end, the Division not only carries on research studies on selected diseases, but also seeks to stimulate the exchange of information among different countries by establishing closer relations with their pathologists.

The Geographic Pathology Division included six branches. Two of these—the Branches of Infectious Diseases and Virology—had been transferred from other divisions in 1961. Under the new organization, Infectious Diseases was

<sup>12</sup> *Ibid.*, pp. 154-160.

<sup>13</sup> *Ibid.*, pp. 161-169.

assigned to Group Captain R. M. Cross, Royal Air Force, as Chief, and the Virology Branch to Col. T. C. Berge, MC, USA. Two other branches of the Division—those of Geographic Pathology and of Leprosy—are headed by Dr. Binford, Chief of the Division. The other branches of the Division are those of Nutritional Pathology, of which Dr. Richard H. Follis, Jr., is Chief, and of Immunology and Bacteriology, of which Maj. (later Lt. Col.) Joseph F. Metzger, MC, USA, is Chief.

### *Extramural Monetary Support*

The main emphasis of the program in Geographic Pathology is support of investigations of diseases of military importance which are encountered in other countries, an activity which is supported financially by the U.S. Army Medical Research and Development Command.<sup>14</sup>

Monetary support of Institute research projects from sources outside the Institute increased from \$700,000 in 1960, to \$880,000 in 1961, and was further increased in the centennial year of the Institute to \$1,055,000, with an additional \$143,000 in prospect. The greater part of this extramural support came from governmental agencies such as the Research and Development Command of the Army, the Veterans' Administration, and the National Aeronautics and Space Administration, but contributions came also from such sources as the National Research Council-National Academy of Sciences, and a variety of societies and foundations devoted to research and education in problems of health and disease for cooperative projects with universities and others.

Scientific and professional aspects of the activities of the Institute and stimulation of, and assistance in, research and education were the principal functions of the Scientific Director (Dr. Robert E. Stowell). The range and extent of the interests of the office are indicated by the degree of participation of the scientific director not only in the work of the Institute, but also in the activities of numerous agencies of governmental and civilian medicine. Thus, he was Chairman of the Advisory Committee of the American Cancer Society on Research on the Pathogenesis of Cancer; editor of the series of monographs of the International Academy of Pathology; and member of the editorial board of the journal *Laboratory Investigation*.

For practical purposes, and in keeping with his educational, research, and consultation functions, the Scientific Director supervised the activities of the offices of the Secretaries—Capt. Binning P. Chambers, USAF, MSC, Education

<sup>14</sup> *Ibid.*, pp. 170-181.

Secretary; Lt. Col. Lloyd J. Neurauter, USAF, VC, Research Secretary; and Maj. Charles B. Broadway, USAF, MSC, Consultation Secretary.

In the Institute's centennial year, the office of the Education Secretary issued the first unit of a planned catalog of the educational aids and activities of the Institute. Ultimately, the completed catalog will include listings of lantern slide and microscopic slide teaching sets, loan sets prepared for the clinico-pathologic conference, video tapes, moving pictures, audio-aids such as magnetic tapes and long-playing records, and exhibits produced not only by the Department of Pathology and the Office of the Scientific Director, but also by the American Registry of Pathology, the Medical Illustration Service, and the Medical Museum.<sup>15</sup>

The American Registry of Pathology (fig. 134) entered the 40th year of the registry movement, and the centennial year of the Institute, with 25 registries, to which there were added, before the year's end, two others, that of Radiation Pathology and Geographic Pathology. The unique organization of the registries, with their facility for followup study of the natural history of disease processes, made it possible in 1961 to conduct over 50 research projects, involving more than 6,000 cases, over 80 percent of which were contributed through the registries.<sup>16</sup>

The Medical Illustration Service (Herman Van Cott, Chief; Morris Goldberg, Assistant Chief), entered the centennial year of the Institute with an organization of four divisions—Scientific Illustration (William E. Macy, Chief); Photography (Julius Halsman, Chief); Printing (Frank Dillon, Chief); and Training Aids (William W. Nicholls, Chief) (fig. 135). In the course of a year, the Scientific Illustration Division produced more than 6,000 illustrations for use in manuals and graphic aids, and for supplying the Medical Illustration Library with pictorial material. Much of this material originates with the Photography Division, which turns out some 250,000 items in a year. The Printing Division produces the fascicles of the "Atlas of Tumor Pathology," the demand for which is so great that it has been necessary to add a nightshift in the printing plant. The Training Aids Division uses pictorial and three-dimensional materials in the production of prototypes of materials to be used in training personnel.<sup>17</sup>

The centennial year of the Medical Musuem with Col. John W. Sheridan, MSC, USA, as Curator (fig. 136), was marked by another move—from Temporary Building S across 7th Street to the same "old red brick" which had been

<sup>15</sup> *Ibid.*, pp. 226-233.

<sup>16</sup> *Ibid.*, pp. 226-231.

<sup>17</sup> *Ibid.*, pp. 215-225.



FIGURE 134.—American Registry of Pathology staff. Left to right, seated: Capt. E. L. Howes, Jr., MC, USA, Maj. H. H. Shamdin, MC, USA. Left to right, standing: Capt. H. M. Price, MC, USA, R. DiPretoro, Capt. A. W. Lazar, USAF, MC, Capt. A. B. Cooper, USAF, MC.

its home for 60 years up to 1947. This time, however, there was a very real difference in conditions from those which had prevailed when the Museum moved out 15 years before. Then, the building, in anticipation of its coming evacuation by the Library of Medicine and the Institute of Pathology, received very limited expenditures for maintenance and virtually nothing for improvements. In 1962, with the decision that the Museum should reoccupy its old home, there went the decision to preserve the building for its historic and architectural interest. The General Services Administration, which is responsible for its upkeep, has undertaken an immediate program of limited rehabilitation to make the building suitable for the Museum, and a longer range plan for interior improvements, such as elevators and plumbing, adequate to permit the installation of some of the histopathology laboratories now housed in the main building. Neither the short-range repairs nor the long-range program of



FIGURE 135.—Medical Illustration Service staff. Left to right, seated: Herman Van Cott, Morris M. Goldberg. Left to right, standing: Julius Halsman, William E. Macy, Frank J. Dillon, Jr., William W. Nicholls.

improvement contemplates alteration of the fundamental architecture of the building, which in and of itself is a true museum piece.

The Museum will occupy the two main exhibit halls on the second floor, with their balconies and their two-story-high ceilings, and one main exhibit hall on the first floor. Office space in the building will be occupied by parts of the Professional Records Service and other offices which will be moved from the main building of the Institute. It is anticipated that when the moves are completed, approximately 100 of the total Institute staff of 650 will be located in the rehabilitated Museum building, with a corresponding decrease in the population pressure on the facilities of the main building.

In distance, the move back into its oldtime quarters (fig. 137) was the shortest of the several moves of the Museum in its hundred years of life. Distance, however, is no measure of the difficulties involved in scheduling such a move, packing the thousands of items that are to go, moving exhibits and display cases, setting them up in their new locations, unpacking specimens, and restoring them to their proper places—and doing all this in a building



FIGURE 136.—Curator and staff of Medical Museum, 1962. Left to right, seated: Col. J. W. Sheridan, MSC, USA, H. R. Purtle. Left to right, standing: G. T. Harrell, 1st Lt. W. R. Schafer, MSC, USA, H. E. Demick.

still undergoing renovation without shutting down the Museum which, in 1961, received 685,000 visitors.<sup>18</sup> This attendance reached its peak on 26 February 1962, the day on which Washington welcomed Col. John H. Glenn, Jr., after his triple orbit around the earth, and when more than 14,000 persons visited the Museum.

### *Scope of the Institute's Activities*

In the broad sense, the whole work of the Institute is educational in purpose and character, but some of the activities aimed specifically at education are shown in figures 117 (p. 353) and 125 (p. 367). Among these activities were the

<sup>18</sup> *Ibid.*, pp. 234-239.



FIGURE 137.—This building, erected for the Army Medical Museum and the Army Medical Library in 1887 was in part occupied by the Museum and its successor, the Institute, until 1955. The Museum and certain offices of the Institute returned to this home in the centennial year 1962.

11 postgraduate short courses offered by the Department of Pathology and attended in 1961 by 1,105 qualified students. The courses were continued in 1962-63, with such subjects as an introduction to research methods, the pathology of tropical and other exotic diseases, the application of histochemistry to pathology, the pathology of diseases of laboratory animals, forensic dentistry, the pathology of the oral regions, orthopedic pathology, ophthalmic pathology, and forensic pathology.

The most widely attended feature of the program was the week of annual lectures by Institute staff members, 42 of which were given in 5 days, with a daily attendance of 256.

Other education activity in 1961 included the loan of nearly 900 sets of clinicopathological conference sets and more than 4,000 microscopic slide teaching sets, and the circulation of nine lectures on tapes to reach wider audiences.

### *Emphasis on Research*

Without in any way diminishing its education or consultation missions, the Institute is placing greater and greater emphasis upon its mission of research. This is particularly notable in the extramural segment of its program, receiving

**SUMMARY OF RESEARCH PROJECTS  
1955 - 1962**

	Calendar Year						
	1955	1956	1957	1958	1959	1960	1961
Number of Publications	35	38	43	77	83	82	88
Number of Intramural Projects	164	118	127	131	134	143	157
Number of Extramural Projects	1	4	13	15	21	37	40
Money Value of Extramural Projects	NOT AVAILABLE	\$32,000	\$109,000	\$127,000	\$336,000	\$700,000	\$879,978

44172

FIGURE 138.—The Institute's expanding research program. The table closes with 1961 but 1962 saw a further increase in the value of this outside support to more than \$1 million.

financial support from sources outside the Institute, as is shown in figure 138. Where there was but one such project in 1955, the year in which the new building was first occupied, and but four in 1956, the first full year of occupancy, there were 40 such projects in 1961. The number and scope of such activities give promise of further growth as more funds are made available and as the widening field of knowledge affords an expanding area of contact between the known and the unknown—the area which is the hunting ground for research.

In one of the Armed Forces Institute of Pathology lectures, recorded on tape, Brig. Gen. Stanhope Bayne-Jones, MC, USA (Ret.), discussed "Research Frontiers for Future Investigations." Looking forward to what might be the ultimate in research into the structure and composition of matter, General Bayne-Jones said:

The ultimate particles which enter into combination to make hydrogen and iron also enter into the construction of bone and muscle, blood, and nerve, and brain. In studying the constitution of atoms we are studying the fundamental stuff of the universe, of suns and mountains and seas—the black carbon of coal, the green chlorophyll of grass, the red hemoglobin of blood. Indeed, nature knows no such specializations as physics, chemistry,

biology, and other categories into which we fit our fragments of knowledge. She knows only the particles and their incessant interactions as expressed in phenomena such as magnetism, radiation, life, and death.<sup>19</sup>

In search for broader knowledge and deeper insight into the nature of these "ultimate particles," the century-old Institute is one of the forward observation posts—an organization rarely equipped for the pursuit of the elusive bits of information which can, in time, lead to a better understanding of the causes and course, and the prevention and cure, of disease.

Writing in 1928, Dr. Esmond R. Long, author of a standard history of pathology, and himself a pathologist of distinction, ventured the opinion that "there is no present warrant for predicting any change so revolutionary as the cellular doctrine of the nineteenth century \* \* \*. There is much to indicate that the modern spirit of pathology is expressed in organization and that present advance is being brought about more through well designed administration than that individual capacity which proved so fertile in the preceding century \* \* \*. Capable administration and the recognition of fruitful projects, although less dramatic, have thus apparently become as important in the furtherance of knowledge in pathology as individual investigative originality."<sup>20</sup>

Writing one-third of a century later, in his "History of American Pathology," published in the centennial year of the Institute, Dr. Long paid tribute to the Institute in terms that are reminiscent of his earlier description of the kind of organization which would become increasingly important in augmentation of knowledge of pathology.<sup>21</sup>

In like recognition of the value of the Institute, the *American Journal of Clinical Pathology*, official publication of the American Society of Clinical Pathologists, devoted a special issue to the Institute as it began its "second century of distinguished service." The special centennial commemoration issue contained seven scientific papers prepared by 16 members of the Institute staff and scientists who had worked at the Institute.<sup>22</sup> This recognition of the Institute was typical of that of other publications in the medical field, including *International Ophthalmology Clinics* which dedicated its June 1962 issue to the Institute's 100th Anniversary. The issue, edited by Dr. Lorenz E. Zimmerman

<sup>19</sup> AFIP tape recording of lecture by Brig. Gen. Stanhope Bayne-Jones.

<sup>20</sup> Long, Esmond R.: *A History of Pathology*. Baltimore: Williams & Wilkins Co., 1928, pp. 275-276.

<sup>21</sup> Long, Esmond R.: *A History of American Pathology*. Springfield, Ill.: Charles C Thomas, Publisher, 1962, pp. 378-380.

<sup>22</sup> *American Journal of Clinical Pathology*, Special Issue in Commemoration of the Centennial Anniversary of the Armed Forces Institute of Pathology, volume 38, July 1962.

of the Institute staff, contains 16 articles dealing with tumors of the eye and adnexa.<sup>23</sup>

A further international note in the recognition of the Institute's centenary was supplied by a special commemorative issue of what is probably the oldest internationally recognized journal in the field of pathology—*Virchow's Archiv*, founded in 1847 by Rudolf Virchow, edited by him until 1902, and continued thereafter as a journal of general pathology, anatomy, physiology, and clinical medicine. In its June 1962 issue, dedicated to the "hundert Jahre" of the Institute, this famous *Archiv* published nine papers by 16 authors of the Institute staff, together with a brief summation of the history of the Museum-Institute by Prof. Dr. E. Uehlinger of Zurich, Switzerland, co-editor of the journal, and a Foreword by Col. Frank M. Townsend, The Director of the Institute.<sup>24</sup>

"It is with a sense of anticipation that we enter the second century of the Armed Forces Institute of Pathology," the Director wrote. "The sum of knowledge gained from the study of pathology will continue to enhance the welfare of men and make it possible for those of the Medical Fraternity of the world to unite their many efforts for the well-being of all."

The Museum-Institute has done much in the first century of its life to add to "the sum of knowledge." As the frontiers of medical knowledge continue to expand, as opportunity for fruitful research is enlarged, as the apparatus of investigation and the techniques of research and communication improve, there is every reason to anticipate even greater contributions in the second and succeeding centuries.

<sup>23</sup> International Ophthalmology Clinics, volume 2, June 1962.

<sup>24</sup> *Virchow's Archiv für pathologische Anatomie und Physiologie und für klinische Medizin*, volume 335, Springer-Verlag: Berlin; Göttingen; Heidelberg, June 1962.

## APPENDIX A

# A Chronologic Synopsis of Events

*1862*

- 25 April: William Alexander Hammond appointed Surgeon General, U.S. Army.
- 1 May: Brigade Surgeon John Hill Brinton and Assistant Surgeon Joseph Janvier Woodward ordered to report to Surgeon General for special duty.
- 21 May: Surgeon General Hammond issued Circular No. 2, establishing the Army Medical Museum.
- 9 June: Hammond issued Circular No. 5 which provided for publication of "The Medical and Surgical History of the War of the Rebellion."
- 1 August: First home of the Museum in the Riggs Bank Building. Hammond ordered Brinton to collect and arrange in the "Military Medical Museum" all specimens of morbid anatomy, both medical and surgical.

*1863*

- 1 January: Second home of the Museum—Pennsylvania Avenue. First catalog of the Army Medical Museum issued by the Curator.
- 25 August: Third home of the Museum—Corcoran School House, 1325 H Street, NW.
- 24 September: Brinton's plan for an Army Medical School rejected by Secretary of War Stanton.

*1864*

- 18 August: Surgeon General Hammond dismissed from the Service by Secretary of War Stanton.
- 3 October: Dr. George Alexander Otis named Curator, to succeed Brinton.

*1865*

- 15 April: Drs. Woodward and Curtis performed the autopsy upon the body of Abraham Lincoln.  
Immediately after the removal of the body, Hermann Faber sketched the deathbed scene.
- 29 April: Autopsy upon the body of John Wilkes Booth performed by Museum's pathologists.
- 1 November: Surgeon General Joseph K. Barnes issued Circular No. 6, describing Woodward's work in photomicrography.

*1866*

- 22 December: Museum settled in Ford's Theater building, its fourth home.

*1867*

- 25 April: First visiting rules issued for the Museum.

*1881*

- 23 February: Dr. Otis died; succeeded by Maj. David Low Huntington as Curator.
- 19 September: President James A. Garfield died; autopsy performed by Dr. D. S. Lamb, Museum pathologist, with Dr. Woodward as recorder.

*1882*

- 30 June: Dr. Lamb performed autopsy of Guiteau, the assassin.

*1883*

- 28 December: Museum and Library consolidated into one division.  
Maj. John Shaw Billings named Curator of Museum as well as Librarian.

*1884*

- 11 October: Billings started microscope collection; first 17 arrived in Museum.

*1885*

- 25 March: Site for new building (fifth home) selected.

*1887*

- 9 November: Museum moved into "new red brick," its fifth home.

*1892*

- 12 April: Congress recognized scientific status of Museum.

*1893*

- 24 June: Army Medical School established in Museum building by Surgeon General George Miller Sternberg.

- 1893*  
8 September: Capt. (later Maj.) Walter Reed appointed Curator of the Museum; succeeded Billings.
- 1895*  
16 September: American Dental Association designated Museum as national repository.
- 1896*  
10 June: First record of use of X-ray in Museum.
- 1898*  
18 August: General Orders No. 194, AGO, designating Typhoid Fever Board.
- 1900*  
24 May: Special Orders No. 22, AGO, designating Yellow Fever Board.
- 7 September: Report of Reed-Vaughan-Shakespeare Board on Typhoid Fever completed at Museum.
- 18 September: Dr. Lazear died of yellow fever.
- 22-26 October: Reed presents "preliminary note" on transmission of yellow fever.
- 20 November: Yellow Fever experiments continued at Camp Lazear.
- 1901*  
6 February: Reed presents findings on transmission of yellow fever before Pan-American Medical Congress in Havana.
- 1902*  
22 November: Walter Reed died; Lt. James Carroll designated Curator.
- 1907*  
16 September: Carroll died; Capt. Frederick Fuller Russell named Curator.
- 1909*  
1 March: First volunteers of Museum staff vaccinated against typhoid by Major Russell.
- 1910*  
7 June: Army Medical School moved out of Museum's "red-brick" building.
- 1911*  
30 September: Vaccination for typhoid made compulsory in Army.
- 1913*  
15 October: Maj. Eugene Randolph Whitmore succeeded Russell as Curator.

- 1915*  
4 August: Col. Champe Carter McCulloch, Jr., in dual post of Librarian and Curator, succeeded Whitmore.
- 1916*  
23 June: Col. William Otway Owen succeeded McCulloch as Curator.
- 1917*  
December: Public Buildings Commission recommends new building on Mall for Museum and Library.
- 1918*  
21 March: Surgeon General ordered forwarding of mosquitoes to Museum for identification.  
20 July: AEF in France requested services of Museum Unit No. 1.
- 1919*  
15 January: Col. Charles Franklin Craig succeeded Owen as Curator.  
11 July: Congress makes appropriation for purchase of land for new building.  
1 September: Maj. George Russell Callender succeeded Craig as Curator.
- 1921*  
17-21 October: First registry established.
- 1922*  
1 May: International Association of Medical Museums relocated its central bureau from Montreal, Canada, to Army Medical Museum.  
Museum became depository of Society of American Bacteriologists.  
Maj. James Francis Coupal succeeded Callender as Curator.
- 1924*  
July: Major Callender returned to serve as Curator; succeeded Coupal.  
Coupal appointed White House Physician by President Coolidge.
- 1929*  
12 February: Maj. James Earle Ash succeeded Callender as Curator.  
Surgeon General's Circular Letter No. 2 defined Museum's four functions pertaining to tissue pathology.
- 1930*  
American Registry of Pathology established.

*1931*

Maj. Paul Edgar McNabb succeeded Ash as Curator.

*1933*

Maj. Virgil Heath Cornell succeeded McNabb as Curator. Registry of Dental and Oral Pathology established; reactivated the arrangement of 1895 between the American Dental Association and Museum.

*1935*

Maj. Raymond O. Dart succeeded Cornell as Curator.

Registry of Otolaryngic Pathology established.

19 July:

Major Dart's special report to Surgeon General on the state of the Museum.

Capt. Hugh Richmond Gilmore, Jr., succeeded Dart as Acting Curator.

*1937*

9 February:

Lt. Col. James E. Ash returned for a second tour of duty as Curator; succeeded Gilmore.

*1938*

Important contributions to Museum of models, pictures, specimens, and instruments.

15 June:

New building for Museum authorized by Congress.

*1940*

4 January:

President Franklin D. Roosevelt earmarks funds for new building in his budget.

13 June:

Appropriation of \$130,000 for preliminaries of construction approved by Congress.

*1941*

11 August:

Consulting Board approved new building plans.

24 September:

President Roosevelt signed H.R. 5146; authorized expenditure increased from \$3,750,000 to \$4,750,000.

11 December:

Surgeon General's Circular Letter No. 121 decentralized pathological facilities and activities of the Army; 18 histo-pathological centers established.

*1943*

November:

Surgeon General informally authorized designation, "Army Institute of Pathology."

26-31 December: Widespread distribution of pathological material on tropical diseases.

*1944*

- 1 January: Curator issued Office Order No. 18; functions and responsibilities assigned. New name of "Army Institute of Pathology" appeared as a subordinate division of Army Medical Museum.

*1945*

- 24 January: Office Order 20, SGO, sets up new board to plan new library and museum building.
- 24 September: Scientific value of pathological "followup" of Veterans' Administration patients recognized.
- 1 December: Report of Committee on Pathology of National Research Council.

*1946*

- 7 June: Army Regulations 40-410 officially designated the Institute as the Army Institute of Pathology.  
Scientific Advisory Board established.
- 12 June: Veterans' Administration requested Army Institute of Pathology assistance.
- 8 July: Army Institute of Pathology became central laboratory of pathology for Veterans' Administration.
- December: Col. (later Brig. Gen.) Raymond Osborne Dart succeeded Ash as Director.

*1947*

- 3 March: Scientific Advisory Board of Army Institute of Pathology held its first meeting.
- 13 April: Second meeting of Scientific Advisory Board; important changes recommended.
- 7 May: Museum opened to the public in its new location at "Chase Hall."

*1948*

- 5 January: Hawley Board submitted report to Secretary of Defense.
- 12 June: President Truman approved Public Law 626, 80th Congress, 2d session; authorized spending of \$600,000 for plans.
- 13 October: Architects and engineers for new building named.
- 19 November: Comptroller General ruled Public Law 626 applied to Forest Glen only.

*1949*

- 21 February: Secretary of Defense Forrestal approved major recommendations of Hawley report.
- 1 June: Preliminary plans for new Institute building at Walter Reed Army Medical Center approved.
- 6 July: General Orders No. 32, Department of the Army, designated the Institute as the Armed Forces Institute of Pathology, effective 1 July.

*1950*

- 15 February: Army Regulations 40-410; Bureau of Medicine Circular Letter 50-8; and Air Force Regulation 160-38 jointly designated "AFIP" as the Armed Forces Institute of Pathology, "TriService."
- 29 April: President Truman signed H.R. 6539 to become Public Law 495, 81st Congress, 2d session.
- May: "Bomb-resistant" structure required by "National Security Resources Board specifications."
- 31 July: Col. Elbert DeCoursey succeeded General Dart as the Director, AFIP.

*1951*

- 6 January: President Truman signed H.R. 9893 (authorization) and H.R. 9920 (appropriation) to become Public Law 910 and Public Law 911, 81st Congress, 2d session.
- 10 July: Ground-breaking ceremonies for new Institute building.

*1953*

- 14 January: Cooney Committee appointed to study AFIP.
- 9 March: Report by Cooney Committee.
- 20 October: Cornerstone-laying ceremonies.

*1954*

- September: International visitors inspected building.

*1955*

- 20 January: First meeting in new auditorium.
- 13 February–March: Move to new building, "Sixth Home," completed in 1 month.
- 26–27 May: Dedication ceremonies.
- June: Contract for television installation.

*1955*

- 1 July: Dr. Ernest W. Goodpasture, first Scientific Director, appointed.
- 1 August: Capt. William Merrill Silliphant, MC, USN, succeeded General DeCoursey as the Director.
- 14 November: Joint Committee on Aviation Pathology established with headquarters at AFIP.

*1958*

- 2 December: World Health Organization-International Reference Center for Soft Tissue Tumors established at AFIP.

*1959*

- 13 April: Dr. Robert E. Stowell, second Scientific Director, appointed.
- 1 August: Col. Frank Marion Townsend, USAF, MC, succeeded Captain Silliphant as the Director.

*1962*

- Extramural research support exceeds \$1 million.

APPENDIX B

## Board of Governors, Armed Forces Institute of Pathology

Surgeons General, U.S. Army:

Maj. Gen. Raymond W. Bliss, 1947-1951  
Maj. Gen. George E. Armstrong, 1951-1955  
Maj. Gen. Silas B. Hays, 1955-1959  
Lt. Gen. Leonard D. Heaton, 1959-

Surgeons General, U.S. Navy:

Rear Adm. Clifford A. Swanson, 1946-1951  
Rear Adm. Lamont Pugh, 1951-1955  
Rear Adm. Bartholomew W. Hogan, 1955-1961  
Rear Adm. Edward C. Kenney, 1961-

Surgeons General, U.S. Air Force:

Maj. Gen. Dan C. Ogle, 1954-1958  
Maj. Gen. Malcolm C. Grow, 1949 (July-November)  
Maj. Gen. Harry G. Armstrong, 1949-1954  
Maj. Gen. Oliver K. Niess, 1958-

APPENDIX C

## Scientific Advisory Board Members, Armed Forces Institute of Pathology

Joseph L. Appleton, M.D.	1946-1949
Theodore S. Beecher, M.D.	1962-
Ivan L. Bennett, Jr., M.D.	1961-
K. M. Brinkhous, M.D.	1957-
Austin M. Brues, M.D.	1947-1957
Charles H. Burnett, M.D.	1952-1956
Brig. Gen. G. R. Callender	1949-
Keith R. Cannon, Sc. D.	1953-
Gustave J. Dammin, M.D.	1961-
Edward W. Dempsey, Ph. D.	1955-
John F. Enders, Ph. D.	1955-1960
William H. Feldman, D.V.M.	1946-
Harry Goldblatt, M.D.	1946-1950
A. McGehee Harvey, M.D.	1956-1961
Howard T. Karsner, M.D.	1946-
Richard A. Kern, M.D.	1962-
James W. Kernohan, M.D.	1947-
John G. Kidd, M.D.	1961-
Cyril N. H. Long, M.D.	1947-1956
Balduin Lucké, M.D.*	1946-1954
James B. McNaught, M.D.*	1955-1959
Karl F. Meyer, M.D.	1946-1956
Carl V. Moore, M.D.	1962-
Robert A. Moore, M.D.	1946-
Alan R. Moritz, M.D.	1955-
John J. Morton, M.D.	1952-
Ralph S. Muckenfuss, M.D.	1961-

\*Deceased

## ARMED FORCES INSTITUTE OF PATHOLOGY

C. Barber Mueller, M.D.	1962-
J. Lowell Orbison, M.D.	1957-
Eugene Pendergrass, M.D.	1955-1960
Maurice C. Pincoffs, M.D.*	1946-1950
Isidore S. Ravdin, M.D.	1946-1950
Arnold R. Rich, M.D.	1946-1957
Edward B. Smith, M.D.	1957-1961
Robert E. Stowell, M.D.	1957-1959
Henry A. Swanson, D.D.S.	1949-
Jerome T. Syverton, M.D.*	1960-1961
Cornelius A. Tobias, Ph. D.	1960-
Shields Warren, M.D.	1946-
William B. Wartman, M.D.	1962-
Lewis Weed, M.D.*	1946-1949
Carl V. Weller, M.D.*	1951-1956
Milton C. Winternitz, M.D.*	1950-1953
Robert W. Wissler, M.D.	1962-
S. Burt Wolbach, M.D.*	1946-1953
David A. Wood, M.D.	1956-1961

\*Deceased

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